Vol. 905 Number 1

OFFICIAL GAZETTE

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PATENTS

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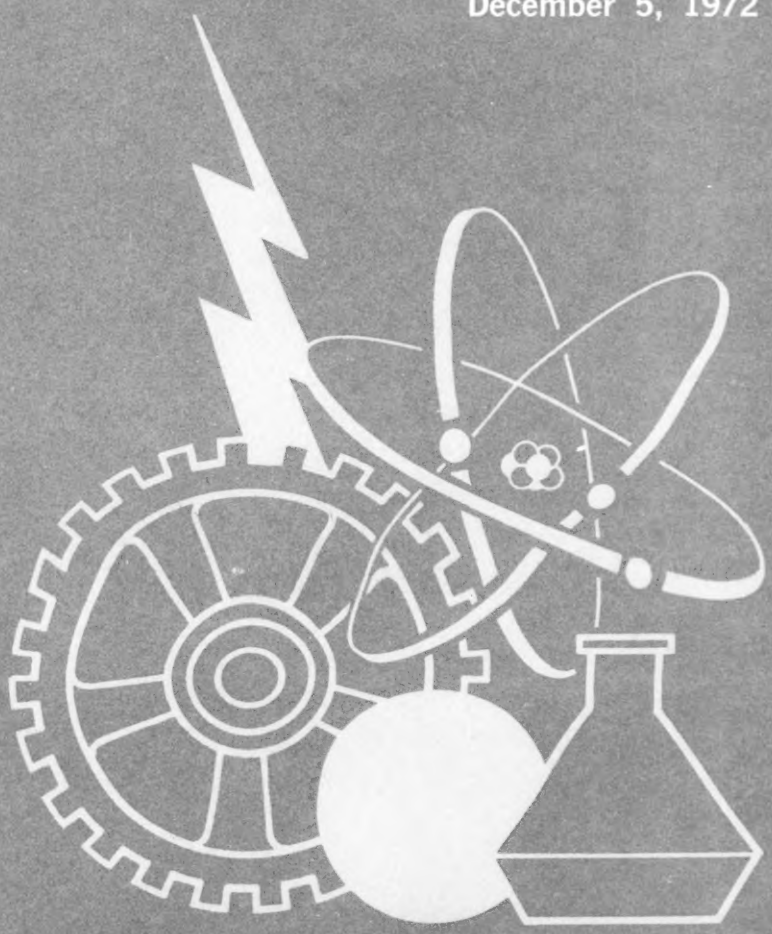

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

December 5, 1972 Volume 905 Number 1

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PATENT OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of November 1972

Examiner affirmed	138
Examiner affirmed in part	13
Examiner reversed	29
Total	180

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,724,720, Berger and Ludwig, DICARBAMATES OF SUBSTITUTED PROPANE DIOLS, **filed** Jan. 13, 1970, D.C.N.J. (Newark), Doc. C–44–70, *Carter-Wallace, Inc.* v. *Rondex Laboratories, Inc.* Stipulation and order of dismissal of action, May 4, 1972.

2,737,503, Sprague and Scantlebury, Jr., METHOD OF MAKING AN EXPANDED OR CELLULAR POLYVINYL CHLORIDE COMPOSITION, **filed** May 24, 1972, D.C. Conn. (New Haven), Doc. 15056, *The B. F. Goodrich Company* v. *No-Ark, Inc.*

2,750,660, J. F. Newcomb, MECHANISM FOR AND METHOD OF CLINCHING NUTS; **2,799,188,** same, MEANS FOR CLINCHING NUTS ON METAL PANELS, **filed** Dec. 24, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c3232, *Multifastener Corporation* v. *MacLean-Fogg Lock Nut Company.* By stipulation ordered cause dismissed as to the first and second causes of action and the defendants' counterclaim, May 25, 1972.

2,764,766, Boyle and Taylor, INFLATABLE LIFE RAFT; **2,804,633,** Taylor and Fraebel, INFLATABLE LIFE RAFT COMPRISING IMPROVED CANOPY AND SUPPORT MEANS THEREFOR, **filed** Apr. 13, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–806–R, *American Safety Flight Systems, Inc.* v. *The Garrett Corporation.*

2,765,131, Schacht and Panetta, ESCAPE SLIDE; **3,102,623,** J. F. Boyle, INFLATABLE ESCAPE CHUTE ASSEMBLY, **filed** June 16, 1972, D.C., S.D. Fla. (Miami), Doc. 72–948–C–JE, *The Garrett Corporation* v. *American Safety Flight Systems, Inc.*

2,771,824, Patch and Grundy, COMPOSITE FLOOR AND DECK COVERING CONSTRUCTION, **filed** May 23, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–1146–WPG, *Crossfield Products Corp.* v. *Mer-Kote Products, Inc. et al.*

2,772,496, Meyrick and Ellsworth, ILLUMINATED SIGN STRUCTURE, **filed** May 16, 1972, D.C., S.D.N.Y., Doc. 72–C–2065, *SCM Corporation* v. *Burroughs Corporation.*

2,799,188. (See 2,750,660.)

2,800,744, A. C. Boultinghouse, TOY AIRCRAFT ENGINE STARTER; **2,855,070,** J. W. McRoskey, STARTING DEVICE FOR TOY ENGINES; **2,875,554,** A. C. Boultinghouse, TOY ENGINE STARTER; **3,250,265,** J. M. Barr, MODEL ENGINE STARTER, **filed** Feb. 7, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c324, *The Testor Corporation* v. *L. M. Cox Manufacturing Company, Inc.*

2,804,401. B. A. Cousino, MAGNETIC SOUND TAPE, **filed** May 25, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1316, *Faraday, Inc., etc.* v. *TDK Electronics Corporation.*

2,804,633. (See 2,764,766.)

2,855,070. (See 2,800,744.)

2,875,554. (See 2,800,744.)

2,895,950, V. K. Krieble, COMPOSITION CONTAINING HYDROPEROXIDE POLYMERIZATION CATALYST AND ACRYLATE ACID DIESTER; **3,046,262,** same, ACCELERATED ANAEROBIC CURING COMPOSITIONS, **filed** Apr. 7, 1972, D.C., S.D.N.Y., Doc. 72–C–1464, *Loctite Corporation* v. *B. Jadow and Sons, Inc.*

2,954,325, E. Von Baumann, COSMETIC CONTAINING MINK OIL, **filed** July 12, 1972, D.C., S.D.N.Y., Doc. 72–2958, *Minkolein Company* v. *Koscot Interplanetary Inc.*

2,956,073, Whetstone and Harman, INSECTICIDALLY ACTIVE ESTERS OF PHOSPHOROUS ACIDS AND PREPARATION OF THE SAME; **3,116,201,** same, ORGANO-PHOSPHOROUS INSECTICIDE, **filed** July 31, 1968, D.C., S.D.N.Y., Doc. 68–C–3115, *Shell Oil Company* v. *Norda Essential Oil & Chemical Co., Inc.* Final consent judgment, defendant and each of its officers enjoined, July 15, 1969.

2,964,083, Pfau, Swart and Weinstock, PNEUMATIC TIRES AND TREAD STOCK COMPOSITION; **filed** Apr. 4, 1961, D.C., N.D. Ohio (Cleveland), Doc. 36799, *The General Tire & Rubber Company* v. *Firestone Tire & Rubber Company.* Memorandum opinion and order, patent is valid, enforceable, infringed and not licensed; further holding is specifically directed to infringement of representative claims 1, 3–5, 7, 13, 14, 17–19 and 22 of representative Stock A, Blend 2 and Blend 5, June 26, 1972.

3,046,262. (See 2,895,950.)

3,052,319, R. K. Swanson, CANTILEVER SHOPPING CART AND COUNTER ASSEMBLY; **3,517,773,** same, CHECK-OUT SYSTEM AND COUNTER FOR USE WITH CANTILEVER SHOPPING CART, **filed** Oct. 27, 1970, D.C., W.D. Okla. (Oklahoma City), Doc. 70–530–C, *Russell K. Swanson and United Steel & Wire Co.* v. *Folding Carrier Corporation.* Judgment entered, no infringement by defendant, complaint dismissed, May 22, 1972.

3,102,623. (See 2,765,131.)

3,116,201. (See 2,956,073.)

3,128,737, E. M. Usab, FLOATING WHARF STRUCTURE; **Re. 24,837,** same, FLOATING WHARF STRUCTURE MADE OF CONCRETE FLOAT UNITS, **filed** May 5, 1972, D.C., W.D. Wash. (Seattle), Doc. 291–72C2, *Waterpavers International, Inc.* v. *Martronics Corporation.*

3,174,114, M. Arditi, ATOMIC CLOCK; **D. 193,989,** Clement and Inhelder, CABINET FOR ELECTRONIC APPARATUS, **filed** Mar. 15, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–596 AAH, *Hewlett-Packard Company* v. *Tracor, Inc.*

3,218,668, Engkjer, Furlong and Zebarth, FEATHER PICKING METHOD; **3,277,515,** same, FEATHER PICKING APPARATUS, **filed** Apr. 11, 1972, D.C., W.D.N.C. (Charlotte), Doc. C–C–72–67, *Gordon Johnson Company* v. *Stork Boxmeer N.V. and Stork Inter-America Corp.*

3,250,265. (See 2,800,744.)

3,277,515. (See 3,218,668.)

3,279,796, R. G. Holman, HOLLOW BALL WITH REINFORCING WINDINGS, **filed** July 13, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–1594–LTL, *AMF Voit, Inc.* v. *Dart Industries, Inc.*

3,321,081, A. H. Willinger, AQUARIUM FILTER APPARATUS, **filed** Aug. 19, 1969, D.C.N.J. (Newark), Doc. 993–69, *Aquariums, Inc.* v. *National Aquarium Supplies and Accessories, Inc. and Robert Newsteder.* Consent order of dismissal of action, May 24, 1972.

3,327,500, J. A. Currier, KNITTED PRODUCTS, **3,340,706,** same, METHODS AND MACHINES FOR STOCKING PRODUCTION, **filed** Apr. 4, 1969, D.C., S.D.N.Y., Doc. 69–C–1388, *Faigenbaum Machinery, Inc.* v. *Scott & Williams Incorporated.* Opinion #38600, the motions to transfer are granted; the motion to sever is denied, June 26, 1972.

3,332,659, Urmetz and Carpenter, BOTTOM RING-WIPER, STRIP ASSEMBLY AND METHOD OF MAKING IT; **3,477,493,** Charman and Middaugh, METHOD OF MAKING A REFRACTORY HOT TOP PANEL INSERT; **3,478,999,** same, REFRACTORY PANEL UNIT WITH HINGE MEANS AND FRANGIBLE PORTIONS, **filed** June 26, 1972, D.C., E.D. Wis. (Milwaukee), Doc. 72–C–376, *Oglebay Norton Company* v. *Universal Refractories Corporation.*

3,340,706. (See 3,327,500.)

3,381,302, Reimus and Saporito, FREEZE CONCENTRATION OF COFFEE EXTRACT, **filed** June 18, 1968, D.C. Del. (Wilmington), Doc. 3566, *General Foods Corporation* v. *Struthers Scientific and International Corporation.* Order of dismissal on consent of the parties, Feb. 23, 1972.

3,404,007, J. G. Muller, FREEZE DRIED COFFEE PROCESS AND PRODUCT, **filed** Feb. 3, 1968, D.C. Del. (Wilmington), Doc. 3666, *Struthers Scientific & International Corp.* v. *General Foods Corporation.* Order of dismissal on consent of the parties signed by Judge James L. Latchum, Feb. 23, 1972.

3,406,618, B. Bowman, METHOD OF MANUFACTURING BRICKS, TILES, COBBLESTONES AND THE LIKE DIRECTLY ON THE GROUND TO BE COVERED, **filed** June 6, 1972, D.C., N.D. Calif. (San Francisco), Doc. C–72–1038 AJZ, *Bomanite Corporation* v. *Fred Sahadi, Pittsburgh-Des Moines, The Prune Yard.*

3,411,501, S. Greenberg, THERMOPLASTIC MOUTHPIECE AND METHOD OF MAKING SAME, **filed** Apr. 27, 1972, D.C., E.D. Pa. (Philadelphia), Doc. CA–72–832, *Samuel Greenberg and Right-Gard Corporation* v. *Croydon Plastics Co., Inc. et al.*

3,473,091, Morris and McDonald, GROUND LEAKAGE DIFFERENTIAL PROTECTIVE APPARATUS; **3,506,906,** D. W. Nestor, GROUND FAULT CIRCUIT INTERRUPTER WITH INADVERTENT GROUND SENSOR, **filed** Nov. 15, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c2744, *Harvey Hubbell, Inc.* v. *Rucker Co. et al.*

3,477,493. (See 3,332,659.)

3,478,999. (See 3,332,659.)

3,506,906. (See 3,473,091.)

3,508,091, R. J. Kavanaugh, DOUBLE CLAW TOOTH STATOR SYNCHRONOUS AND STEPPING MOTOR WITH INDICATOR, **filed** May 22, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1274, *North American Philips Corp.* v. *Molon Motor & Coil Corp.*

3,517,773. (See 3,052,319.)

3,529,328, P. T. Davison, MAGNETIC CLOTHESPIN, **filed** May 30, 1972, D.C., N.D. Tex. (Dallas), Doc. CA–3–5912–C, *Hoz-Pin Corporation* v. *Numo Mfg. Company Inc. et al.*

3,552,252, Maxey, Montague, Leyde and Bryan, VENEER DEFECT DETECTOR AND CLIPPER CONTROL. **filed** Apr. 19, 1971, D.C. Oreg. (Portland), Doc. C–71–263, *The Black Clawson Company* v. *Morvue, Inc.*

3,563,859, A. J. Fink, DISPOSABLE CULTURE DEVICE, **filed** May 5, 1972, D.C., N.D. Calif. (San Francisco), Doc. C–72–806 SW, *Aaron J. Fink* v. *Smith Kline & French Laboratories and John Wentz Does I throu III inclusive.* **Same, filed** June 15, 1972, D.C., N.D. Calif. (San Francisco), Doc. C–72–1110 OJC, *Aaron J. Fink* v. *Smith Kline and French Laboratories.*

3,566,982, Share, Share and Share, WELL POINT SYSTEM, **filed** May 5, 1972, D C., M.D. Fla. (Jacksonville), Doc. 72–326–C, *Stanley-Jackson Corporation* v. *Griffin Wellpoint Corp. and Griffin Wellpoint Corp. (Fla.).*

3,582,084, Ryan and Chang, DEVICE FOR REPRODUCING RECORDED SOUNDS IN TOYS, **filed** Oct. 18, 1971, D.C., S.D.N.Y., Doc. 71–C–4536, *Mattel, Inc.* v. *Ideal Toy Corporation.*

3,587,619, J. L. Krechel, COMPRESSOR UNLOADER AND CHECK VALVE UNIT, **filed** Aug. 19, 1971, D.C., W.D. Pa. (Erie), Doc. C.A. 68–71, *Joseph L. Krechel* v. *Air-Con, Inc., Wolfe Metal Products Corp.* Order entered dismissing case without prejudice subject to the provisions of a settlement agreement, Apr. 26, 1972.

3,588,391, Banathy, Rosenski and Sechrist, PLUG-IN TWENTY-FOUR HOUR TIME SWITCH, **filed** Apr. 17, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c964, *International Register Co.* v. *McGraw-Edison Co.* Ordered, action be dismissed without prejudice, June 9, 1972.

3,589,660, B. P. Dunckel, LIGHTING FIXTURE HANGER, **filed** May 19, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1261, *National Service Industries, Inc.* v. *Harvstone Mfg. Corp.*

3,594,021, R. M. Williams, EXPANSION JOINT, **filed** Apr. 19, 1972, D.C., W.D.N.C. (Charlotte), Doc. C–C–72–76, *Charlotte Pipe and Foundry Company* v. *Genova Products, Inc.*

3,595,438, Daley and Miller, AUTOMATIC DETERGENT DISPENSER SYSTEM, **filed** Jan. 11, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c81, *Economics Laboratory Inc.* v. *Calgon Corporation.*

Re. 24,387. (See 3,128,737.)

D. 193,989. (See 3,174,114.)

Erratum

In the OFFICIAL GAZETTE of June 20, 1972, vol. 899, No. 3, page TM 132, paragraph 2, beginning with 2,715,309 under Patent Suits should be deleted and the following substituted under Trademark Suits:

Reg. No. 673,554 (BAN-LON), Joseph Bancroft & Sons Co., filed Feb. 4, 1972, D.C., W.D.N.C. (Charlotte), Doc. C–72–30, *Joseph Bancroft & Sons Co.* v. *Jesco Kitwear Corporation and Jessee Halperin.*

Certificates of Correction for the Week of Dec. 5, 1972

P.P. 3,139	3,628,121	3,654,309	3,666,344
Re. 27,278	3,628,648	3,654,345	3,666,537
3,535,402	3,629,275	3,655,104	3,666,585
3,554,755	3,629,536	3,655,376	3,666,692
3,572,892	3,630,765	3,655,520	3,666,844
3,574,741	3,632,023	3,655,537	3,667,007
3,576,552	3,634,622	3,655,798	3,667,138
3,583,577	3,635,024	3,655,912	3,668,060
3,585,203	3,635,975	3,656,936	3,668,135
3,585,393	3,636,031	3,656,272	3,669,133
3,587,265	3,636,362	3,656,371	3,669,990
3,589,956	3,637,458	3,657,218	3,670,215
3,592,401	3,637,492	3,657,236	3,670,306
3,593,068	3,637,670	3,657,275	3,670,379
3,594,255	3,639,294	3,657,318	3,670,395
3,600,574	3,640,461	3,657,572	3,670,460
3,601,589	3,640,642	3,657,956	3,670,705
3,604,725	3,640,733	3,658,713	3,670,972
3,607,725	3,643,209	3,658,796	3,671,053
3,607,857	3,644,501	3,658,816	3,671,499
3,608,791	3,644,596	3,658,871	3,671,500
3,608,984	3,645,147	3,658,911	3,671,523
3,609,471	3,645,683	3,660,319	3,671,897
3,609,554	3,646,035	3,661,887	3,672,127
3,610,181	3,647,150	3,662,191	3,672,381
3,612,622	3,647,296	3,662,499	3,672,419
3,614,375	3,647,468	3,663,010	3,672,444
3,615,521	3,649,163	3,663,386	3,672,961
3,615,621	3,649,928	3,663,423	3,673,133
3,615,893	3,651,005	3,663,477	3,673,273
3,615,910	3,651,223	3,663,654	3,673,552
3,616,152	3,651,347	3,663,687	3,673,671
3,616,313	3,651,508	3,663,749	3,673,681
3,617,764	3,651,917	3,664,061	3,674,589
3,619,260	3,652,148	3,664,560	3,674,742
3,619,335	3,652,525	3,664,835	3,674,780
3,622,340	3,652,563	3,664,864	3,674,781
3,622,543	3,652,571	3,665,002	3,674,848
3,625,271	3,653,425	3,665,027	3,679,419
3,627,421	3,653,996	3,665,029	
3,627,874	3,654,012	3,665,194	

Errata

All references to Patent Number 3,682,449 to Alpha Severn, Carburetor and Dash Pot Control Therefor, appearing in the OFFICIAL GAZETTE of Aug. 8, 1972 should be deleted as the application inadvertently issued.

All references to Patent Number 3,682,985 to Imre Bacso, et al., 17α-Propadienyl-Substituted Steroids, appearing in the OFFICIAL GAZETTE of Aug. 8, 1972 should be deleted as the application inadvertently issued.

All references to Patent Number 3,687,834 to James T. Candor, Method and Apparatus for Removing Particles from Fluid Containing the Same, appearing in the OFFICIAL GAZETTE of Aug. 29, 1972 should be deleted as the application inadvertently issued.

All references to Reissue Patent Number 27,496 to Peter Andrews, Dual Square, appearing in the OFFICIAL GAZETTE of Oct. 3, 1972 should be deleted as the application inadvertently issued.

Dedications

3,409,535.—*Edward Ross*, Headington, Oxford, and *Edward Clive Allen*, Cowley, Oxford, England. ELECTROCHEMICAL MACHINING APPARATUS HAVING EXTENSIBLE AND CONTRACTIBLE ELECTROLYTE CHAMBER. Patent dated Nov. 5, 1968. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company*.

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

3,437,877.—*Charles B. Heffron*, Metuchen, N.J. SCANNING CIRCUIT. Patent dated Apr. 8, 1969. Dedication filed Mar. 16, 1972, by the assignee, *Westinghouse Electric Corporation*.

Hereby dedicates to the People of the United States the entire term of said patent.

3,458,424.—*Joseph L. Bender*, Wheeling, Ill. ELECTROCHEMICAL MACHINING APPARATUS UTILIZING A MECHANICALLY DEFORMABLE CATHODE. Patent dated July 29, 1969. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company*.

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

3,536,599.—*Lynn A. Williams*, Winnetka, Ill. ELECTROLYTIC CAVITY SINKING APPARATUS AND METHOD WITH PRESSURE MEANS FOR FORCING A MACHINED SLUG FROM THE ELECTRODE. Patent dated Oct. 27, 1970. Dedication filed Dec. 23, 1971, by the assignee, *Anocut Engineering Company*.

Hereby dedicates to the Public the portion of the term of the patent subsequent to Dec. 24, 1971.

Disclaimers

Design No. 213,385.—*Lester V. Molenaar*, Willmar, Minn. BUILDING TOY. Patent dated Feb. 25, 1969. Disclaimer filed Aug. 18, 1972, by the inventor.

Hereby enters this disclaimer to the entire claim of said design patent.

Design No. 222,734.—*Karl Wiedemann*, Cherry Hill, N.J. DISH. Patent dated Dec. 14, 1971. Disclaimer filed Apr. 19, 1972, by the assignee, *Melitta, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to July 27, 1985.

2,974,238.—*Robert D. Lohman*, Princeton, N.J. MULTIVIBRATOR CIRCUIT. Patent dated Mar. 7, 1961. Disclaimer filed July 21, 1972, by the assignee, *Radio Corporation of America*.

Hereby enters this disclaimed to claims 1 through 9, inclusive, of said patent.

3,368,972.—*Ferdinand P. Otto*, Woodbury, N.J. HIGH MOLECULAR WEIGHT MANNICH BASES AS ENGINE OIL ADDITIVES. Patent dated Feb. 13, 1968. Disclaimer filed Mar. 1, 1972, by the inventor, the assignee, *Mobil Oil Corporation*, consenting.

Hereby enters this disclaimer to claim 6 of said patent.

3,444,395.—*Philip B. Foster*, Phoenix, *Richard A. Gissel*, Tempe, and *Walter C. Seelbach*, Scottsdale, Ariz. J-K FLIP-FLOP. Patent dated May 13, 1969. Disclaimer filed May 19, 1972, by the assignee, *Motorola, Inc.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 6, 7 and 8 of said patent.

3,572,860.—*Robert F. Hart*, Downers Grove, Ill. MODIFIED CYLINDRICAL ROLLER BEARING. Patent dated Mar. 30, 1971. Disclaimer filed Feb. 14, 1972, by the inventor, and the assignee, *General Motors Corporation*.

Hereby enters this disclaimer to claim 1 of said patent.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 14, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-19-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-05-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-09-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-31-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-01-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	3-22-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	10-18-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-13-71
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-21-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-18-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	4-07-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-30-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	9-01-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	10-27-71
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	12-13-71
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-15-71

Expiration of patents: The patents within the range of numbers indicated below expire during December 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,725,558 to 2,728,912, inclusive
Plant Patents..... Numbers 1,436 to 1,441, inclusive

PLANT PATENTS

GRANTED DECEMBER 5, 1972

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,262
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 14, 1970, Ser. No. 80,825
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—82 1 Claim

1. A new and distinct cultivar of chrysanthemum characterized particularly to uniqueness when compared to the parent cultivar Stingray by its 4"–8" more vigor, its 3–4 days later response, a longitudinal petal roll giving a more pointed petal appearance, and a more intense red color.

3,263
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 30, 1970, Ser. No. 85,831
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—82 1 Claim

1. A new and distinct variety of chrysanthemum characterized particularly as to uniqueness in comparison with the parent cultivar Torch by its more intense red flower color and its superior color retention under high light and high temperature conditions, fading under such conditions to a lighter red bronze as contrasted with the parent cultivar Torch which fades under such conditions to a light orange bronze.

3,264
PEONY PLANT

Carl G. Klehm, 2 E. Algonquin Road, Arlington Heights, Ill. 60005

Filed Feb. 1, 1971, Ser. No. 111,771
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of peony plant of the species botanically known as *Paeonia lactiflora*, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a rather fine textured, balanced and vigorous root system which produces thick, strong and relatively weather-resistant stem, attractive and healthy, succulent, clean, and spotless foliage of dark green color, dependability of flower bud formation and opening thereof, with a dependable relatively early blooming season, a relatively large flower size having a fully double rose-type flower form, a distinctive and attractive vivid rose pink flower color overlaid on a soft red background and with a silver edging on the extremities of the flower petals, and a suitability for use with other perennial plantings such as for borders and backdrops for other plant settings, as well as suitability for attractive cut flowers.

3,265
PEONY PLANT

Carl G. Klehm, 2 E. Algonquin Road, Arlington Heights, Ill. 60005

Filed Feb. 1, 1971, Ser. No. 111,772
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of peony plant of the species botanically known as *Paeonia lactiflora*, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a healthy, strong and vigorous habit of growth, clean, blotch-free and succulent green foliage of attractive appearance, a ruffled flower form having a shape falling about midway between bomb-shaped and double-rose shaped types, a distinctive and attractive soft and extremely delicate pink flower color, and a suitability for use for garden and landscape plantings, for borders and backgrounds for other plant settings, and for cut-flower uses and exotic arrangements.

3,266
PEONY PLANT

Carl G. Klehm, 2 E. Algonquin Road, Arlington Heights, Ill. 60005

Filed Feb. 1, 1971, Ser. No. 111,775
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—68 1 Claim

1. A new and distinct variety of peony plant of the species botanically known as *Paeonia lactiflora*, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a relatively dwarf habit of growth ranging from about 20 inches to 24 inches tall, with short, stiff and weather-resistant stems, clean and lush soft green foliage of attractive appearance, an extremely compact and bomb-shaped color, with red candy striping on the dorsal extremities of the topmost petals, and with a double row of guard petals which blend and mellow to a lighter and softer pink color at the petal extremities, while the extreme central petals in the bomb-shaped body of the flower blend to a creamy peach color, and a suitability for mass use in landscape hedges and background plantings, as well as for decorative cut arrangements.

PATENTS

GRANTED DECEMBER 5, 1972

GENERAL AND MECHANICAL

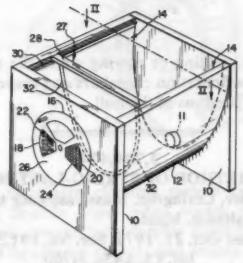
3,704,469
WRAP-AROUND GARMENT
Bernard Levy, 91 Chatham Road, Kensington, Conn.
Filed Nov. 20, 1970, Ser. No. 91,433
Int. Cl. A41d *7/00, 15/00*
U.S. Cl. 2—67 **8 Claims**

A wrap-around garment includes an elongated strip of pliable material which has an aperture therein intermediate the ends thereof, with one end portion extending through the aperture and being secured outwardly thereof. The intermediate portion of the strip is adapted to encircle the body of a wearer, and adjustable means is provided adjacent the aperture to vary its effective size.

3,704,470
NOVELTY POCKET ITEM
Emil V. Beno, 1265 Woodside Lane, Elm Grove, Wis., and Michael A. Novak, 4560 N. 67th Street, Milwaukee, Wis.
Filed May 12, 1971, Ser. No. 142,443
Int. Cl. A41b *15/00*
U.S. Cl. 2—279 **8 Claims**

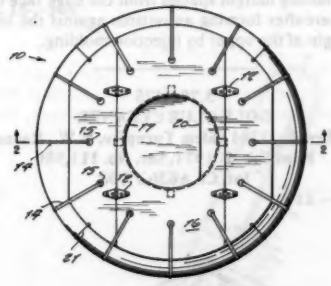
A novelty device which simulates a pair of panties is designed to fit invertedly in the breast pocket so as to simulate a handkerchief. The bottoms of the leg portions are bordered preferably in lace with the two leg portions slightly separated to simulate two panel portions of a hanky. The item is used for its amusing shock value when it is removed from the pocket and the viewer can then see it is a small pair of pants.

3,704,471
BEEHIVES
William B. Bielby, Flat 3, 74 Cornwall Road, Harrogate, Yorkshire, England
Filed Jan. 23, 1970, Ser. No. 5,201
Int. Cl. A01k *47/00, 47/06*
U.S. Cl. 6—2 **2 Claims**



A beehive having a brood frame which has a contour corresponding to the shape of a catenary. Rotatable means in the wall of the frame permit only certain bees, no bees or all bees access into the frame.

3,704,472
FLOAT FOR A ONE MAN HUNTING BLIND
Stanton E. Huey, Jr., 2128 Maywood Drive, Monroe, La.
Filed Jan. 18, 1971, Ser. No. 107.261
Int. Cl. B63b *7/08*
U.S. Cl. 9—5 **2 Claims**

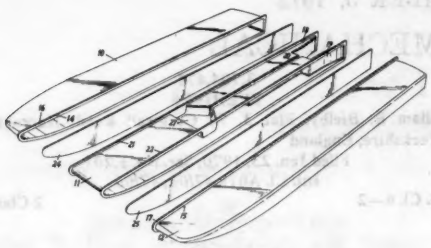


A blind for shooting duck or other game, the device comprising a circular plywood panel which is secured upon a tractor tire inner tube and secured thereto by leather belts, and the base having a central dry well made of a 55 gallon oil drum, the device being provided with eight anchor lines of nylon belts which lead to eight anchors.

3,704,473
HULLS IN WATER CRAFT
Donald W. Sessions, White Horses, Kingston Gorse, Sea Lane, Angmering-on-Sea, England
Filed Jan. 11, 1971, Ser. No. 105,211
Int. Cl. B63b *7/04*
U.S. Cl. 9—2 S **6 Claims**

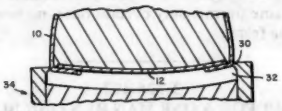
A unique hull of essentially three parallel compartments held together into a single pontoon member is disclosed. The

central compartment or section is shaped to accomodate a propeller shaft as well as a well or depression suitable in shape



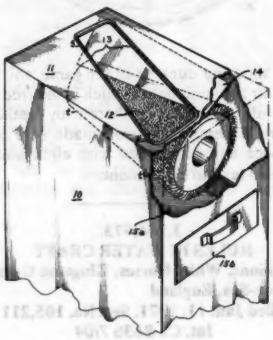
for sailing gear, seating or rowing while the outer two compartments act as floatation chambers and respectively the starboard and port portions of the hull.

3,704,474
METHOD OF STRING-LASTING
Julius G. Winkler, Lexington, Mass., assignor to Compo Industries, Inc., Waltham, Mass.
Filed Oct. 21, 1971, Ser. No. 191,317
Int. Cl. A43d *21/00*
U.S. Cl. 12—145 **14 Claims**



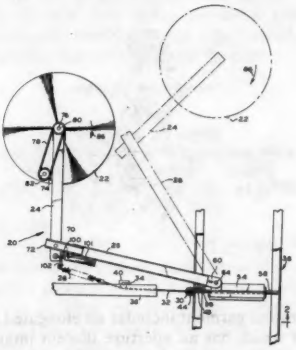
The method of shoe making which comprises placing an insole on the bottom of a last, string-lasting an upper onto the last over the exposed face of the insole while holding the inner side of the lasting margin spaced from the edge face of the insole and thereafter forming an outsole against the insole and lasting margin of the upper by injection molding.

3,704,475
GOLF CLUB CLEANER
Wilbur G. Brooks, 3304 Salem Turnpike, N.W., Roanoke, Va.
Filed Feb. 2, 1971, Ser. No. 111,980
Int. Cl. A63b *57/00*
U.S. Cl. 15—21 E **1 Claim**



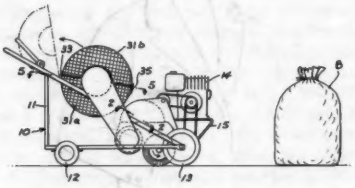
A housing provided with a power driven, rotating, tapered brush arranged within the housing, access to the brush from without the housing for the insertion of a golf club head to be cleaned being by an angularly disposed slot having on longitudinal edge parallel with the lateral surface of the brush and a blade adjacent the brush coacting with the rotation of the brush to prevent ejection of material through the slot.

3,704,476
WRAPAROUND BRUSHING DEVICES
Daniel C. Hanna, 1133 Riverton Drive, Portland, Oreg.
Continuation of Ser. No. 81,133, Oct. 15, 1970, abandoned.
This application Nov. 26, 1971, Ser. No. 202,279
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 D **11 Claims**



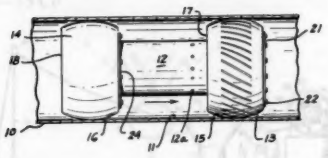
A wraparound brushing device **20** (FIGS. **1–4**) has a linkage carrying a brush and urged toward a normal position by a spring and a counterweight. A top brushing device **120** (FIGS. **5** and **6**) includes a pair of linkages at each side which fold as the brush rolls over the top of a car and then unfold to cause the brush to follow the rear surfaces of the car. Wraparound brushing devices **220** (FIG. **7**), **320** (FIG. **8**), **420** (FIG. **9**) and **520** (FIG. **10**) are moved around moving cars solely by the action of rotating brushes and constantly operative biasing means.

3,704,477
LEAF SWEEPER AND LOADER
Peter Bonnis, 584 W. Golden Gate, Detroit, Mich.
Filed April 1, 1971, Ser. No. 130,220
Int. Cl. E01h *1/04*
U.S. Cl. 15—79 **17 Claims**



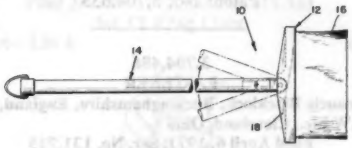
A leaf sweeper and loader comprising a wheeled hand-guided vehicle having a rotary sweeper element rotatably mounted thereon about a transverse axis and a screw mounted for rotation about another transverse axis adjacent the sweeper element. A casing surrounds the screw and having a longitudinal opening through which the leaves and cuttings are directed by a shroud extending from the sweeper element to the casing. A passage extends from one end of the casing to a foraminous housing in which a collapsible bag is positioned to receive the compacted leaves and cuttings.

3,704,478
PIPELINE PIG
Burton Vernooy, Tulsa, Okla., assignor to T. D. Williamson, Inc., Tulsa, Okla.
Filed Feb. 25, 1971, Ser. No. 118,638
Int. Cl. B08b 9/04
U.S. Cl. 15—104.06 R 2 Claims



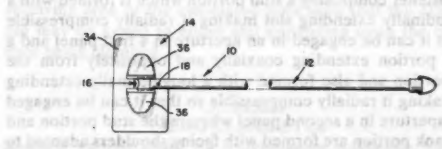
The pipeline pig disclosed includes a cup-shaped cleaning element having a spherically shaped outer surface with a diameter equal to or greater than the inside diameter of the pipeline for engaging a pipeline inner wall even as the pig passes through curved sections of the pipeline. The cleaning element has a plurality of grooves in its outer surface that provide a plurality of scraping edges to scrape rust, scale, and other substances from the inner wall of the pipeline.

3,704,479
BROOM HAVING A REMOVABLE PIVOTABLE HANDLE
Wiley M. Whitaker, 227 Lexington Road, Asheboro, N.C.
Filed Jan. 6, 1971, Ser. No. 104,225
Int. Cl. B25g 3/38
U.S. Cl. 15—172 5 Claims



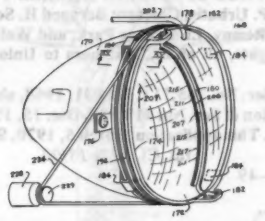
A broom having a handle is pivotably connected with respect to the broom block having bristles secured therein. A handle connector is releasably fastened to the handle and releasably pivotably connected to the broom block by means of a snap coupling.

3,704,480
MOP HAVING A REMOVABLE PIVOTABLE HANDLE
Wiley M. Whitaker, 227 Lexington Road, Asheboro, N.C.
Filed Jan. 6, 1971, Ser. No. 104,226
Int. Cl. A47l 17/08; B25g 3/38
U.S. Cl. 15—144 R 5 Claims



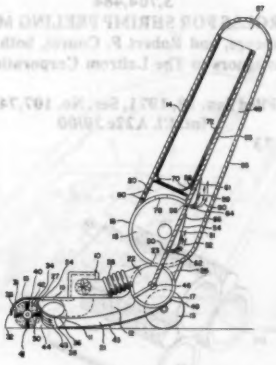
A mop comprising a mop head portion pivotably connected to a handle and handle fastener through a releasable coupling. The mop may be utilized in a conventional manner or the mop head portion may be used by hand upon removal of the handle and handle fastener.

3,704,481
AUTOMOTIVE HEADLAMP CLEANING SYSTEM
Lewis Harvey Fennell, 141 Seminary Avenue, Greensburg, Pa.
Continuation-in-part of Ser. No. 834,989, June 20, 1969, abandoned, which is a division of Ser. No. 562,012, April 20, 1966, Pat. No. 3,493,804, which is a continuation-in-part of Ser. No. 414,711, Nov. 30, 1964, abandoned. This application May 21, 1971, Ser. No. 145,717
Int. Cl. B60s 1/04
U.S. Cl. 15—250.01 33 Claims



I disclose a headlamp cleaning system comprising wiper means having flexible wiper edge means in contact with headlamp means, means for rotatably supporting one of said wiper and said headlamp means, and means for driving that one of said wiper and said headlamp means so supported such that said wiper and said headlamp means are relatively rotated one against the other, said wiper being elongated and supported at its ends by annular support means which are substantially aligned with said headlamp means so that said wiper is longitudinally engaged therewith during said relative rotation of the wiper and headlamp means.

3,704,482
CLEANING DEVICE
Joseph W. Brannon, 302 Miner Road, Highland Heights, Ohio
Filed Oct. 8, 1970, Ser. No. 79,192
Int. Cl. A47l 9/00
U.S. Cl. 15—348 8 Claims



A cleaning device utilizing the properties of a fluid at atmosphere plus pressure or above atmospheric pressure to effect a cleaning operation.

An electric motor on the cleaning device generates a small stream of atmosphere plus fluid such as, but not necessarily limited to, air, which stream of fluid is made to "bend" within the cleaning device, and reverse the direction of flow of the fluid stream. This design feature accomplishes three objectives: (1) it eliminates the need for the conventional and relatively inefficient vacuum type cleaner; (2) it forces a relatively small volume of fluid to attach itself to the underside of a

horizontal surface; and (3) it encourages the relatively small volume fluid stream to entrain within its path substantially large volumes of dust-saturated fluid. Thus, instead of "sucking up" dirt as conventional cleaning devices of this nature do by means of vacuum or negative pressure, the cleaning device in this invention uses a stream of positive pressure fluid to push the dirt-and-dust-saturated fluid into a suitable receptacle.

3,704,483

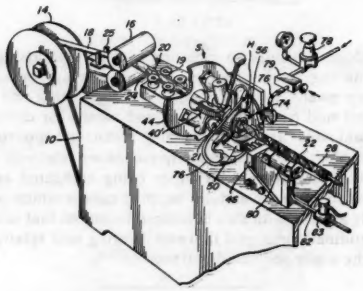
METHOD OF MAKING SHIRRED TUBING

Algimantas P. Urbutis, Chicago; Bernard H. Schenk, Hinsdale; Joseph J. Risany, La Grange Park, and Walter V. Marbach, Palos Heights, all of Ill., assignors to Union Carbide Corporation

Division of Ser. No. 765,711, May 31, 1968, abandoned, which is a division of Ser. No. 418,506, Dec. 15, 1964, Pat. No. 3,397,069. This application March 5, 1970, Ser. No. 16,651

Int. Cl. A22c *13/00*

U.S. Cl. 17—49 14 Claims



A method and apparatus are provided for uniformly compressing and compacting a length of flexible, tubular sausage casing into a coherent, shirred casing stick which, from end to end, exhibits circumferential uniformity, is substantially straight and has an uninterrupted, uniform bore.

3,704,484

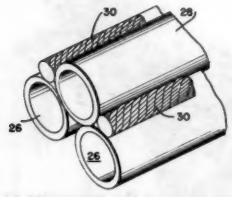
INSERT ROLLS FOR SHRIMP PEELING MACHINES

James M. Lapeyre, and Robert F. Couret, both of New Orleans, La., assignors to The Laitrom Corporation, New Orleans, La.

Filed Jan. 19, 1971, Ser. No. 107,745

Int. Cl. A22c *29/00*

U.S. Cl. 17—73 2 Claims



The insert rolls of a Shrimp Peeling Machine are spirally or otherwise grooved to provide a series of spirally disposed knife-like edges upstanding from the surfaces of the rolls to improve the peeling action on shrimp as by offering rougher and sharper points and surfaces to better grasp the appendages of shrimp, such as the swimerettes and the edges of undersized shells whereby to pull and strip the shells from the meats.

3,704,485

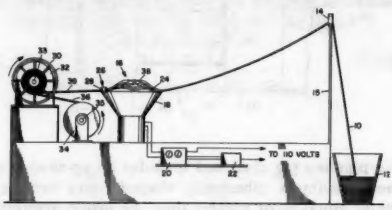
APPARATUS FOR SPREADING A GRAPHITE FIBER TOW INTO A RIBBON OF GRAPHITE FILAMENTS

John N. Hall, Brookside Park, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 14, 1970, Ser. No. 97,988

Int. Cl. D01b *3/04*

U.S. Cl. 19—65 T 3 Claims



An apparatus for spreading a graphite fiber tow into a mass of substantially individual graphite filaments is provided. Spreading of the filaments is achieved by vibrating the graphite tow in air pulsating at a frequency and intensity sufficient to couple the energy of the pulsating medium to the graphite tow. Vibration of the tow in air causes separation and spreading of the filaments in the tow.

ERRATUM

For Class 24—230 see:
Patent No. 3,704,633

3,704,486

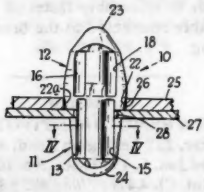
FASTENER

Colin Francis Blacklock, Buckinghamshire, England, assignor to TRW Inc., Cleveland, Ohio

Filed April 6, 1971, Ser. No. 131,715

Int. Cl. A44b *21/00*

U.S. Cl. 24—73 P 7 Claims

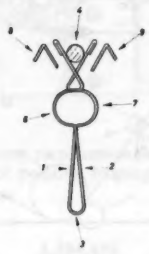


A fastener comprising a stud portion which is formed with a longitudinally extending slot making it radially compressible so that it can be engaged in an aperture in a first panel and a shank portion extending coaxially and oppositely from the stud portion and also formed with a longitudinally extending slot making it radially compressible so that it can be engaged in an aperture in a second panel wherein the stud portion and the shank portion are formed with facing shoulders adapted to locate behind the panel in which the said portion is engaged and the angle of inclination of the shoulder on the stud portion is greater than the angle of inclination of the shoulder on the shank portions whereby the resistance to removal of the stud portion from the aperture in the first panel is substantially greater than that of the shank portion from the aperture in the second panel.

3,704,487
DEVICE FOR HANGING CHRISTMAS TREE DECORATIONS

Bruno R. Mohr, 68 Mannheim, 0 7/27, Germany

Filed Feb. 1, 1971, Ser. No. 111,682
Claims priority, application Germany, Feb. 17, 1970, P 20 07 164.1
Int. Cl. A44b *21/00*
U.S. Cl. 24—73 CP 1 Claim

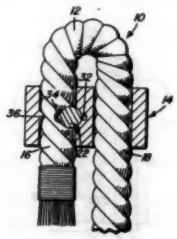


A device for hanging Christmas tree decorations is shown comprising a clamp which exhibits two spring prongs which cross one another and are moveable in the plane of their longitudinal axes, and in which each prong is bowed in the plane of its moveability in order to accommodate a Christmas tree branch.

3,704,488
LINE CLAMP

Edward Ted Higgins, Saginaw, Mich., assignor to Line & Rope Clamps, Inc.

Filed Jan. 20, 1972, Ser. No. 219,333
Int. Cl. F16g *11/04*
U.S. Cl. 24—126 A 8 Claims



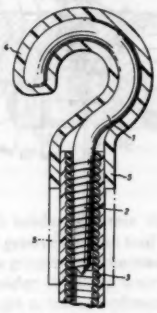
A line end clamp for boat lines or the like, said clamp comprising a relatively rigid block with a pair of spaced substantially parallel bores extending therethrough for receiving a line, a hole passing transversely through one of the bores and off set therewith, and a clamping pin removably mounted in the hole for occupying a portion of the bore for retentatively compressing and clamping the line. The hole is provided with a pair of longitudinal slots, one of which is located in the line-receiving area of the associated bore such that the clamping pin may be keyed to either slot depending upon the type of rope being clamped.

3,704,489
HOOKS AND EYES

Kenneth Norman Rudd, No. 8 Greenacres, Ashington, England

Filed July 20, 1970, Ser. No. 56,494
Claims priority, application Great Britain, Nov. 7, 1969, 54,598/69; Aug. 25, 1969, 42,238/69
Int. Cl. A44b *13/00*
U.S. Cl. 24—122.3 2 Claims

The present invention relates to hooks and eyes of the type which may be screwed on to the ends of helically wound curtain cords or into supporting surfaces. In accordance with the main feature of the invention there is provided such a hook or eye of which at least a straight shank portion is at least partly surrounded over at least part of its length by a shroud that is spaced from the said shank thereby to provide an annular gap therebetween. The shroud serves either to permit the leading end of a curtain cord to extend sealingly between the shroud

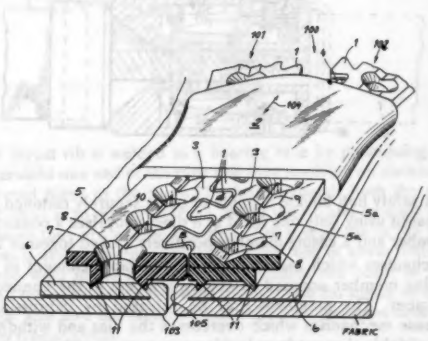


and the shank or to space the hook or eye from a supporting surface into which it is screwed. The shank may be screw threaded or may be unthreaded and formed of material that will become self-threaded as screwed into a thread such as that of a helically wound curtain cord. In one embodiment of the invention the shroud is moulded as an integral part of the hook or eye thereby to form therewith a one-piece unit.

3,704,490
COUPLING ELEMENT FOR SLIDE FASTENERS

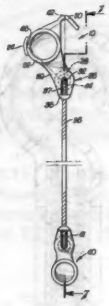
Harry Hansen, Copenhagen, Valby, Denmark, assignor to Opti-Holding AG, Glarus, Switzerland

Filed Oct. 12, 1971, Ser. No. 188,334
Claims priority, application Germany, Oct. 14, 1970, P 20 50 438.5; Jan. 20, 1971, P 21 02 460.2
Int. Cl. A44b *19/14*, *19/34*
U.S. Cl. 24—205.1 10 Claims



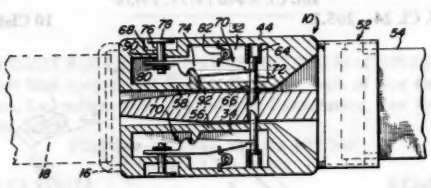
A coupling element for a slide fastener consists of a strip of thermoplastic synthetic resin material bent or folded about a longitudinal axis into a U-section or J-section so that a wide leg directly overlies a narrow leg and overhangs the latter to form a guiding edge of the slider. The bight of the folded strip is provided with spaced-apart coupling formations or heads matingly engageable with the heads of the opposing coupling element in a slide-fastener stringer. Openings in the strip are provided to clear a needle which serves to stitch the coupling element to a support tape or directly onto the fabric of the garment, while formations around these openings on the underside of the folded strip engage the fabric to prevent shifting of the coupling element relative to the fabric.

3,704,491
SLIDE ZIPPER OPERATING TOOL
Wilfrid M. Burgess, 575 East Cypress, Burbank, Calif.
Filed Nov. 19, 1971, Ser. No. 200,293
Int. Cl. A44b *19/00, 19/26*
U.S. Cl. 24—205.15 H **7 Claims**



A slide zipper operating tool adapted to hook the slot in the lever of a conventional slide zipper fastener so as to open and close the zipper fastener responsive to a pull from a remote location on a cord attached to the tool. The tool has a wide base that normally rests on the zipper fastener to prevent the tool from twisting out of alignment with the zipper fastener and is proportioned so that the lever of the zipper slider is held at approximately the optimum angle for opening and closing the zipper fastener.

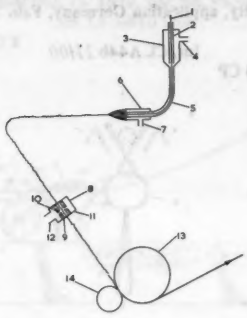
3,704,492
SAFETY BELT BUCKLE CONSTRUCTION
Edwin L. Meredith, Sr., 516 N. Main Street, Cleburne, Tex.
Filed Dec. 20, 1971, Ser. No. 209,992
Int. Cl. A44b *17/00, 11/26*
U.S. Cl. 24—223 **8 Claims**



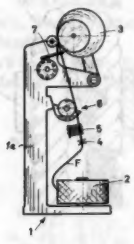
A safety belt buckle capable of being securely fastened and released using only one hand at a time comprises a connector member and a casing member positively locked together by a mechanism which includes a biased slidable element in the casing member adapted to engage a recess in the connector member. The members may be released by depressing a release mechanism which overcomes the bias and withdraws the slidable element from locking engagement with the recess.

3,704,493
HEAT TREATMENT OF YARNS
Robert Reid Coats, and John Michael Greenway, both of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England
Filed March 13, 1970, Ser. No. 19,344
Claims priority, application Great Britain, March 21, 1969, 15,009/69
Int. Cl. D02j *3/16*; D02g *1/00*
U.S. Cl. 28—1.2 **6 Claims**

A process and apparatus for the uniform heat treatment of yarns wherein a yarn is entrained in a stream of air and is passed therewith into a central passageway of a burner leaving the outlet of the central passageway at a point where the air and a combustible fluid, which is separately supplied to the burner through a surrounding passageway terminating at the same point, meet and are ignited the yarn continuing to move in an axial direction through the combustion flame.



3,704,494
CONDITIONING APPARATUS FOR YARN OR THREAD
Manfred Schreiber, Horgen, Switzerland, assignor to Maschinenfabrik Schweiter AG, Horgen, Switzerland
Filed Nov. 17, 1970, Ser. No. 90,375
Claims priority, application Switzerland, Nov. 18, 1969, 17130/69
Int. Cl. D06c *1/00*; B05c *1/08*
U.S. Cl. 28—59 **6 Claims**

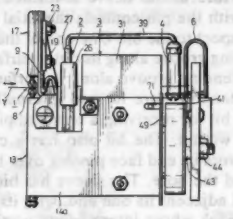


A rotatable finishing roll, which is at least partially immersed in a conditioning agent contained in a trough, is removable and magnetically coupled to a drive shaft. Centering means, preferably formed as a flange on the finishing roll which overlaps a member attached to the drive shaft, maintains the finishing roll coaxial with the drive shaft without the necessity of performing separate alignment operations.

3,704,495
YARN TENSION CONTROLLING APPARATUS
Atsunori Yamamoto, Onomichi, Japan, assignor to Nakao Kurosu, Hiroshima-ken, Japan
Filed June 29, 1971, Ser. No. 157,846
Claims priority, application Japan, Dec. 29, 1970, 45/120850; Dec. 29, 1970, 45/120851; Dec. 29, 1970, 45/120852
Int. Cl. D81h *19/22*
U.S. Cl. 28—64 **8 Claims**

A yarn tension controlling apparatus containing multistaged yarn tensioning parts of surface friction and nip friction

types arranged in sequence wherein large sized infeed yarn tension fluctuations are effectively compensated so as to result



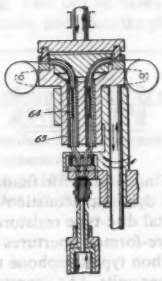
in smaller sized delivery yarn tension fluctuations with an effective prevention of possible hunting phenomenon in the compensating reaction.

3,704,496

MACHINE FOR ASSEMBLING CONTACT SOCKETS FOR ELECTRICAL CONNECTIONS OF THE PLUG-AND-SOCKET TYPE

Lev Vasilievich Kuznetsov, ulitsa Beketova, 20, kv. 15; Zunya Mikhalevich Slavinsky, ulitsa Beketova, 20, kv. 24; Vasily Alexeevich Kalachev, ulitsa Krasnoslskaya 13"b", kv. 20; Alexandr Leonidovich Krupin, ulitsa Inzhenernaya, 21, kv. 74; Nikolai Alexandrovich Aristarkhov, ulitsa Kosogornaya, 14, kv. 6, all of Gorky; Eduard Jurievich Popkov, ulitsa Sotsialisticheskaya, 7, kv. 59; Vladimir Alexandrovich Trutnev, ulitsa Vosstania, 90, kv. 1, both of Kazan, and Nikolai Petrovich Bulychev, ulitsa Beketova, 20, kv. 4, Gorky, all of U.S.S.R.

Filed July 2, 1969, Ser. No. 838,488
Int. Cl. H01j *9/06, 9/10, 9/46*
U.S. Cl. 29—25.19 **10 Claims**



The present disclosure relates to the manufacture of electrical connections of the plug-and-socket type, and, more particularly, it relates to machines for assembling multi-wire contact sockets.

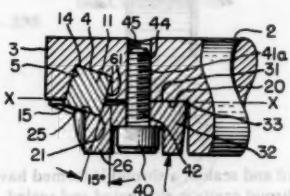
A machine disclosed in the specification perform a complete operating cycle of assembling a multi-wire contact socket for a plug-and-socket connection and comprises an assembling mandrel mounted in a mandrel head carried by a rotary work table and a plurality of operation performing mechanisms mounted about this table, the mechanisms including those for applying the rings and the sleeves of the sockets to be, for step-by-step feeding and cutting of wires, for bending the upper end portions of the cut lengths of wire, for applying the end pieces onto the pre-assembled sockets and for inwardly offsetting the predetermined portions of the pre-assembled sockets. The assembling mandrel cooperates with all said mechanisms in succession, this interaction being effected and controlled by the motion-distributing mechanism of the machine.

3,704,497

CUTTING TOOL

Louis A. Derwin, 4513 Cross Street, Downers Grove, Ill.

Filed Nov. 9, 1970, Ser. No. 87,985
Int. Cl. B26d *1/12*
U.S. Cl. 29—96 **9 Claims**



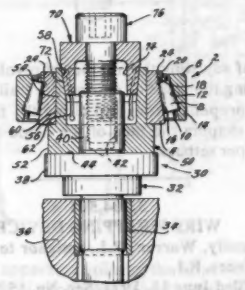
A cutting bit and holder, wherein the holder is provided with a square edged groove and the tool is of square cross section and fits into the groove and therewith extends diagonally to the axis of the holder. A clamp which tightens against the holder has a right angle notch complimentally admitting an exposed corner of the tool and holding it tightly in the groove and torsionally preloads the tool.

3,704,498

METHOD OF WELDING BEARING COMPONENTS

John W. Rundt, Dellroy, Ohio, assignor to The Timken Company, Canton, Ohio

Continuation-in-part of Ser. No. 85,085, Oct. 29, 1970, abandoned. This application July 26, 1971, Ser. No. 165,927
Int. Cl. B23p *11/00, 11/02*
U.S. Cl. 29—148.4 A **14 Claims**



A thrust rib is welded to a bearing race by positioning the rib around one end of the race and then applying an outwardly directed force to the race. The force expands both the race and rib so as to pre-stress them. While the rib and race are pre-stressed they are welded together. The magnitude of the pre-stress is approximately equal to the amount of stress induced in the weld metal as that metal solidifies and cools so that when the pre-stress is released the race and rib shrink to their initial size and the metal of the weld area becomes substantially free of stress.

3,704,499

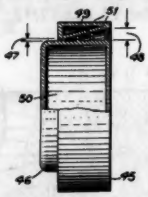
METHOD OF PRODUCING A NOZZLE FOR A TURBOGENERATOR

Charles P. Majkrzak, Nutley, and Michael S. Polgar, Eatontown, both of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Division of Ser. No. 556,990, June 13, 1966, Pat. No. 3,449,589, which is a continuation of Ser. No. 807,161, Feb. 10, 1969. This application Oct. 6, 1970, Ser. No. 78,635
Int. Cl. B23p *15/26*
U.S. Cl. 29—157 C **6 Claims**

A method of producing a nozzle for a turbogenerator. A plurality of spiraling grooves are cut on a constant-diameter

bar, the bar is tapered by cutting away part of the ridges between the grooves, a cavity is formed with the bar, the cavity is evacuated and sealed, a shroud is formed having a cavity therein, the shroud cavity is evacuated and sealed, and the bar and shroud are assembled together to form a nozzle.

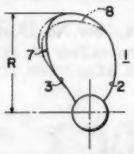


3,704,500

METHOD OF CORRECTING A NUMBER OF REVOLUTION OF A SCREW PROPELLER

Hiroshi Okamoto, Kazuya Okada, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kyogo, Japan

Filed Oct. 15, 1970, Ser. No. 80,859
Claims priority, application Japan, Oct. 15, 1969, 44/82331
Int. Cl. B23p 7/00
U.S. Cl. 29—401 **1 Claim**



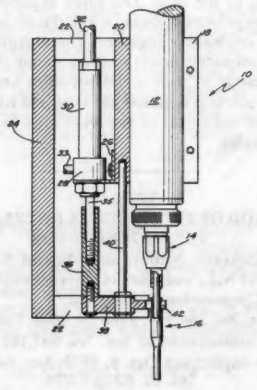
A method of adjusting the number of revolutions of a screw propeller having the steps of cutting the trailing edge of each blade of the propeller from and along the trailing edge, and working and shaping the face of the blade to a curvature to provide a proper setback.

3,704,501

WIRE WRAPPING DEVICE

Daniel T. Hannify, Warren, R.I., assignor to Ostby & Barton Co., Providence, R.I.

Filed June 11, 1971, Ser. No. 152,181
Int. Cl. H01r 43/04
U.S. Cl. 29—203 D **4 Claims**



A wire wrapping device having a rotatable bit assembly comprised of a sleeve and a bit. A transversely oriented bore in said bit mates with an aperture through one wall of the sleeve and has a pin inserted in said bore which extends into said aperture to prevent rotational movement between the two. The aperture in the sleeve is formed as a vertical slot which along with the pin controls the axial movement of the sleeve with respect to the bit. One end of the bit has a longitudinally extending groove along its outer surface and also a longitudinally extending groove along its surface and also a longitudinally extending bore formed internally from the outer surface of the bit for receiving a terminal pin upon which the wire is to be wound. The bit also has a channel extending completely across its end face passing over both the mouth of the groove and the bore. The sleeve has bit support gripping means formed adjacent its one end, with its other end having an elongated neck whose intermediate portion has part of its circumferential surface longitudinally cut away. Formed at the tip of the neck is a hook finger for capturing the end of a wire which is to be wound upon a pin terminal. The hook is brought into operation after the wire is oriented transversely to the intermediate portion of the neck at a position somewhere between the channel in the end face of the bit and the mouth of the finger hook. As the sleeve is axially drawn upwardly around the bit the mouth of the hook engages the wire and draws it into the channel located in the open face of the bit. Continued upward movement cams the tip of the wire into the groove along the outer surface of the bit, thus placing the apparatus in readiness for winding of the wire upon a terminal pin.

3,704,502

APPARATUS FOR FLUIDICALLY CONTROLLING THE ASSEMBLY AND DYNAMIC RESISTANCE ADJUSTMENT OF ACOUSTIC RESISTORS

Benjamin F. Meyers, Indianapolis, Ind., and John E. Oldis, Jr., Titusville, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed June 25, 1970, Ser. No. 49,636
Int. Cl. H01r
U.S. Cl. 29—203 R **11 Claims**

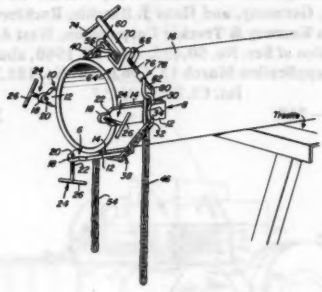
A method of and apparatus for fluidically controlling the sensing, staking and dynamic acoustic resistance adjusting of porous, sintered metal disc-type resistors mechanically fed to and seated within pre-formed apertures in the armature-supporting frame of carbon type telephone transmitter or central armature type receiver units. At a "sensing" station, air flow is established through each acoustic resistor previously positioned within a pre-formed aperture of the frame, and the total resultant back pressure is measured, with the magnitude thereof being used as a control parameter in a fluidic circuit to determine the presence or absence, as well as acceptable or unacceptable position, of one or more resistors which should have pre-viously been seated in the frame. At the "staking" station, the magnitude of a similarly established back pressure is utilized as a control parameter in the fluidic circuit to determine the particular degree of force which should be applied to each resistor by the staking punches during each staking operation. This permits the air flow resistance exhibited by the resistors staked in each frame to be dynamically adjusted within very close limits, regardless of any physical variations that may exist between such resistors as manufactured. Memory circuitry within the fluidic circuit stores information received from both the sensing and staking stations and provides delayed output control signals for selectively operating frame ejection apparatus employed at Accept or Reject stations associated with, but removed from, the sensing and staking stations, respectively.

3,704,503

PIPE ALIGNING CLAMPING DEVICE

Jesse B. Haywood, 141 Louise Drive, S.E., Concord, N.C.

No Drawing. Filed Jan. 27, 1971, Ser. No. 110,048
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 P 7 Claims



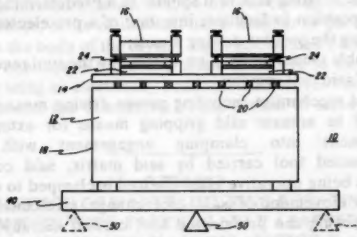
A device for lining up and temporarily maintaining abutting ends of pipe sections in alignment preparatory to welding and permanently joining said sections. It comprises a plurality of companion clamps positioned and circumferentially spaced around a selected one of said pipe sections. Several chains, one short and two long, are operatively coordinated with and serve to link the several clamps together. Manually regulatable slack take-up and chain tautening means connects end portions of two of the encircling chains in a manner to draw the chains around the selected pipe section. Corresponding ends of the respective clamps project and provide circumferentially spaced jaw-like piloting guides which center and align the pipe sections. Setscrews or equivalent means on the projecting ends serve in a manner to retain the aligned ends for precision welding. This device saves time and material, dispenses with other tools, and takes the place of a helper.

3,704,504

APPARATUS FOR INSERTING SMALL ARTICLES IN A MATRIX PLATE

Ansel A. Koegler, Macedon, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Aug. 6, 1971, Ser. No. 169,719
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 R 10 Claims



A matrix plate, formed with a plurality of apertures for receiving elongated articles therein, is mounted on a vibration machine. A honeycomb assembly having a plurality of cells is mounted on the matrix plate. Each cell has a preferred dimensional configuration to enhance the tumbling action of the elongated articles as they are walked from one cell to the next adjacent cell as well as to orient the articles in an erect position for insertion into the apertures of the matrix plate.

3,704,505

O-RING INSERTION TOOL

Wilford G. Lacer, Jr., 4013 W. Maricopa, Phoenix, Ariz., and Leland E. Mathews, 4422 W. Crittenden Lane, Phoenix, Ariz.

Filed May 10, 1971, Ser. No. 141,555
Int. Cl. B23p *19/00*
U.S. Cl. 29—235 10 Claims

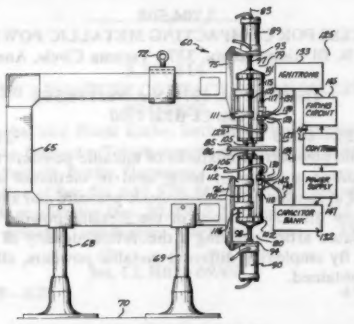
A tool which provides for facile and rapid insertion of O-ring sealing members within rectilinear bushing seals.

3,704,506

ELECTROMAGNETIC HIGH ENERGY FORMING

La Vern G. Orr, Auburn, and Nobuo Yutani, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Aug. 1, 1968, Ser. No. 749,386
Int. Cl. B23p *11/00*; B21j *15/24*; B21d *26/02*
U.S. Cl. 29—243.54 31 Claims



Disclosed is an apparatus utilizing the forces exerted upon a conducting surface of a tool by a pulsed intense magnetic field to propel the tool against a workpiece. The conductor surface is initially positioned in a pulsed high flux density magnetic field. As the conductor is subjected to the suddenly rising magnetic field, electrical currents (so-called eddy currents) are produced by the passage of the field into the conductor surface developing an intense force repelling the tool away from the means generating the magnetic field. The working surface of the propelled tool imposes a high density force against the workpiece suitable for cutting or otherwise forming it. A specific application of such a tool for installing rivets is described in detail. The improved riveted structure produced by the electromagnetically propelled riveter is also disclosed.

3,704,507

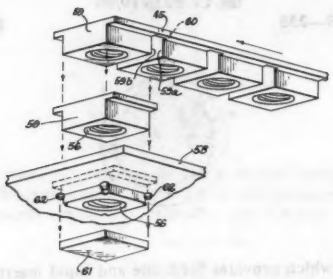
METHOD OF FABRICATING AND ATTACHING PIERCE NUTS TO A PANEL

William L. Grube, Lake Bluff, Ill., assignor to MacLean-Fogg Lock Nut Co., Mundelein, Ill.

Filed March 23, 1970, Ser. No. 21,777
Int. Cl. B23p *17/00*, *11/00*
U.S. Cl. 29—417 5 Claims

A strip containing a series of flanged pierce nuts connected by flexible and severable sections for use in automatically ap-

plying flanged pierce nuts to a panel. The method of forming the strip is also disclosed and comprises providing a blank strip formed with opposed laterally extending flanges, perforating the strip between the flanges, and then slotting the strip



between adjacent perforations to form the nut body, after which the sides of the strips are straightened, the holes are threaded and the strip coiled into predetermined lengths. Further, there is disclosed the method of applying pierce nuts from such strip to a panel.

3,704,508

PROCESS FOR COMPACTING METALLIC POWDERS

Vincent N. Di Giambattista, 3371 Tacoma Circle, Ann Arbor, Mich.

Filed Feb. 24, 1971, Ser. No. 118,562
Int. Cl. B22f 1/00
U.S. Cl. 29—420.5 **27 Claims**

Metallic powders or mixtures of metallic powders together with a dilute solution of boric acid in methanol are consolidated at substantially atmospheric pressure and a temperature below the solidus point of the metallic powder to form consolidated articles having a theoretical density of 99% or greater. By employing different metallic powders, alloys can also be obtained.

3,704,509

ANNEALING FOR STRESS RELIEVING OF MULTILAYER PRESSURE VESSELS

Takeshi Yamauchi, Kobe, Japan, assignor to Kobe Steel, Ltd., Fukiai-ku, Kobe-shi, Japan

Filed July 6, 1970, Ser. No. 52,410
Claims priority, application Japan, July 5, 1969, 44/53385
Int. Cl. B23k 31/02
U.S. Cl. 29—471.1 **6 Claims**

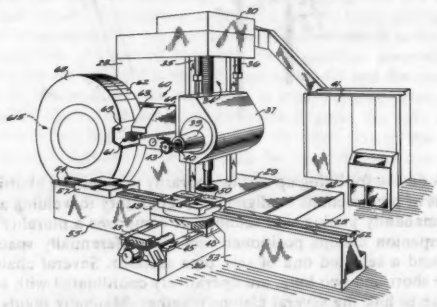
A process of annealing for stress relieving of multilayer pressure vessels having a multilayer wall of a material capable of being appreciably hardened upon subjection to the welding heat or of relatively thick plates, which comprises individually annealing for stress relieving a unitary multilayer cylinder with or without prior annealing of the innermost layer alone, and then locally annealing the vessel fabricated of the cylinder and end plates along the circumferential welds thereof.

3,704,510

MACHINE TOOL WITH TOOL CHANGER

Robert K. Sedgwick, Waukesha, Wis.; Werner K. Behrendt, Bielefeld, Germany, and Hans J. Baechle, Rockford, Ill., assignors to Kearney & Trecker Corporation, West Allis, Wis.

Continuation of Ser. No. 50,495, Aug. 18, 1960, abandoned. This application March 13, 1962, Ser. No. 181,226
Int. Cl. B23q 3/157
U.S. Cl. 29—568 **37 Claims**



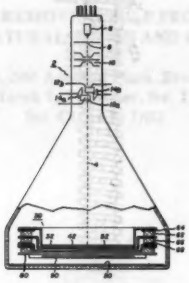
4. In a machine tool having a tool change station;
a tool change mechanism provided with extensible tool gripping means carried for bodily movement in the tool change station;
a tool storage matrix adapted to carry a plurality of cutting tools;
power operable means connected to move said storage matrix for moving a preselected tool into said tool change station;
positive drive means affixed to the preselected tool stored in said change station;
a power driven rotatable tool spindle provided with complementary positive driving means and being carried for bodily movement relative to the tool change station;
power driven means connected to effect bodily movement of said tool spindle into proximity to the tool change station and into predetermined spaced relationship to the preselected tool;
means for rotating said tool spindle to a predetermined angular position to facilitate insertion of a preselected tool carrying the positive driving means;
a releasable clamp mechanism carried by the tool receiving end of said tool spindle;
a control mechanism including power driving means connected to actuate said gripping means for extensible movement into clamping engagement with the preselected tool carried by said matrix, said control means being operative after the tool is clamped to effect bodily movement of said tool change mechanism for withdrawing the preselected tool carried thereby from said storage matrix to effect bodily movement of the preselected tool into a position of axial alignment with said tool spindle, and to effect bodily insertion of the preselected tool into the tool receiving end of said spindle, said control mechanism being then operative to release said gripping means to inactive position;
and means for actuating said clamp mechanism for securing the preselected tool in said spindle in a manner that the positive driving means respectively carried by said tool and said spindle are in positive intermeshing engagement.

3,704,511

FLY'S EYE LENS PROCESS

John M. Hooker, Owensboro, Ky., assignor to General Electric Company

Filed Dec. 18, 1969, Ser. No. 886,218
Int. Cl. B23k 21/00; B23p 11/02
U.S. Cl. 29—592 9 Claims



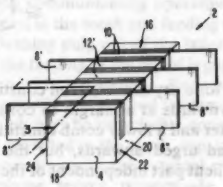
An improved structure and method for the electrostatic lens array of a fly's eye lens in an electron beam device resulting in precise parallel spacing of the planar lens electrodes as well as precise axial alignment of the arrays of openings in the lens electrodes.

3,704,512

UNITARY ELECTRO-OPTIC ARRAY DEVICE MAKING PROCESS

Arthur R. Siegel, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 29, 1968, Ser. No. 779,826
Int. Cl. H01c 7/00; H01j 15/02
U.S. Cl. 29—572 R 1 Claim



An array of electro-optical units in the form of a unitary device is formed. A single electro-optical crystal, such as lithium, niobate, or its equivalent, has a number of parallel slots cut into the body of the crystal. Each slot is filled with an electrically conductive foil that is made to adhere to the walls of the slot using an electrically conductive adhesive. The foils extend beyond the boundaries of the crystal to serve as electrodes.

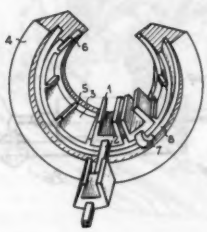
3,704,513

METHOD OF MANUFACTURING ROTATING COMMUTATORS, PARTICULARLY ADAPTED FOR AUTOMATIC MACHINE ASSEMBLY

Lucien Coquard, Asnieres, France, assignor to Societe Industrielle de Travaux Electro-Mecaniques (S.I.T.E.M.)

Filed May 14, 1970, Ser. No. 37,277
Int. Cl. H01r 43/00
U.S. Cl. 29—597 8 Claims

A continuous strip of conductive material, for example copper, bronze, aluminum or the like is provided having, in alternate sections, the cross-sectional shape of commutator segments (channel-shaped, T-shaped, L-shaped, C-shaped), and rod-like connecting strips, preferably half, or less the thickness of the commutator segments. A ring-shaped mold is provided, having segmental steel inserts separated by separator strips of blued steel; the steel inserts form guide ways for the segments, which are pushed in, severed at the far end of the connecting strip, and the mold is then indexed to the next guide way position accepting a commutator segment from the continuous strip. The commutator ring is then secured together by molding plastic in the spaces between the commutator segments, as known, or are otherwise locked together for example by means of insulating spacer shims inserted between the segments, and the mold pressed together.

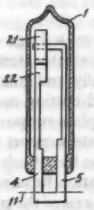


3,704,514

SEALED ARMATURE CONTACT RELAY MAKING PROCESS

Walter Fuchs, and Horst Esche, both of Berlin, Germany, assignors to Deutsche Telephonwerk und Kabelindustrie Aktiengesellschaft, Berlin, Germany

Continuation of Ser. No. 641,570, May 26, 1967, abandoned.
This application Dec. 30, 1969, Ser. No. 888,125
Claims priority, application Germany, June 4, 1966, D 50248
Int. Cl. H01h 69/02
U.S. Cl. 29—622 4 Claims



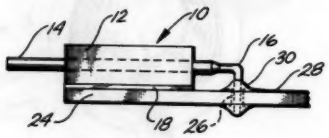
Two magnetizable contact springs are hermetically sealed in a tube to be controlled by magnetic force from the outside. The two contact springs are made from flat strip material by a single stamping operation which produces a substantially rectangular frame structure which is open at one of the short sides where the contact faces are to be located. The frame is joined with, and sealed in, the tube so that the two leg portions of the frame structure extend to the outside of the tube where the frame structure is ultimately cut away to leave two separate terminals. A normally open contact is formed by bending one of the two legs, at least at its top portion, so that it forms a contact face opposite the contact face of the other leg.

3,704,515

METHOD FOR MOUNTING CONNECTORS ON PRINTED CIRCUIT BOARDS

Robert D. Nelson, Covina, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 10, 1969, Ser. No. 883,861
Int. Cl. H05k *3/30*; B21p *17/00*
U.S. Cl. 29—626 **1 Claim**



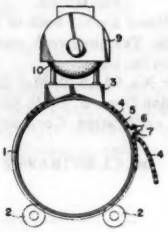
A method for mounting a connector with molded-in contacts on a printed circuit board using adhesive material for temporarily bonding the connector to the board during the time that the terminal pins of the molded-in contacts are permanently bonded to the board.

3,704,516

LARGE DIAMETER PIPE CUTTING DEVICE

Teizo Ono, 4-32 Itachibori Kitadori Nishiku, Osaka, Japan

Filed Oct. 22, 1970, Ser. No. 82,892
Int. Cl. B23d *45/12*, *47/02*
U.S. Cl. 30—96 **5 Claims**



This invention relates to a large diameter pipe cutting device for cutting a large diameter steel or cast pipe by moving a cutting machine vertically and bilaterally along the outer periphery of the pipe, said cutting machine including a two-parallelly opposed legged plate support and a cutter driven by an electric motor, said plate support being guided along the outer periphery of the pipe by a bush chain or chains wound tightly on the pipe in a relation forming a vertical plane meeting at right angles with the axis of the pipe.

3,704,517

ROTATING ROD SAW AND METHOD OF MAKING SAME

Thomas M. Deterling, 660 via Zapata, Riverside, Calif.

Filed Dec. 7, 1970, Ser. No. 95,475
Int. Cl. B27b *5/12*
U.S. Cl. 408—26 **6 Claims**

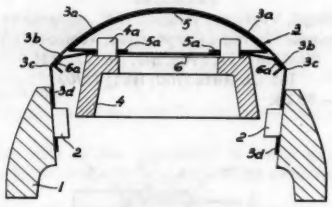
A rod is first grooved longitudinally along helical lines by broaching, milling, forging, or the like, after which a helical groove is cut by a threading die across the longitudinal grooves, the helixes of the grooves being oppositely directed to form cutting teeth having a leading chisel-like cutting edge from which a facing surface and a side surface trail, the included angle between the surfaces being acute. After wear, the teeth can be sharpened by reforming the grooves using dies of slightly smaller size. During cutting action, the rod saw develops thrust and tends to move lengthwise; a reaction member is provided to resist such movement and make for easier operation.

3,704,518

CUTTER HEAD FOR DRY SHAVING APPARATUS

Gerhard Heyek, Rosenberggasse 61, 8010 Graz, Austria

Filed Sept. 8, 1970, Ser. No. 70,084
Int. Cl. B26b *19/04*, *19/10*
U.S. Cl. 30—346.51 **3 Claims**



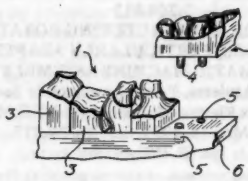
In a cutter head for a dry shaver, a foil constituting an upper cutter is bent downwards at a margin to constitute an upper comb, a lower cutter and a lower comb constitute a unit which is reciprocated and urged upwards, but the lower comb is nevertheless a resilient part independent of the lower cutter.

3,704,519

METHOD TO PREPARE A DENTAL MODEL

Gregers Lystager, Vedbaek, Denmark, assignor to Whaledent, Inc., New York, N.Y.

Filed May 19, 1971, Ser. No. 144,835
Claims priority, application Denmark, May 27, 1970, 2700/70
Int. Cl. A61c *13/00*
U.S. Cl. 32—11 **1 Claim**



A method of producing a model of teeth and jaws by providing a base having holes into which at least two pins on each

removable segment of the model extend and mounting the jaw impression on the base so that the bushings stick into the base after the base has hardened.

3,704,520

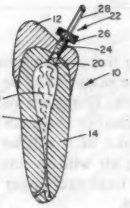
METHOD OF REMOVING PULP FROM THE PULP CAVITY OF A NATURAL TOOTH AND APPARATUS FOR SAME

Bernard Weissman, 304 Ashland Place, Brooklyn, N.Y.

Filed March 9, 1971, Ser. No. 122,376

Int. Cl. A61c *5/02*

U.S. Cl. 32—57 **14 Claims**



A method for extracting pulp from a pulp canal in teeth comprises forming a channel in a tooth and extending the channel into communication with a pulp canal in the tooth. An external suction source is then secured into communicating operative association with the channel and suction is induced in the pulp canal to extract pulp from the latter. The method furthermore comprises securing a liquid supplying external source into communicating operative association with the channel formed in the tooth and feeding the liquid into the pulp canal for flushing pulp out of the latter. The inducing of the suction and the feeding of the liquid is generally done in alternating relation with one another. Apparatus for extracting pulp in accordance with the method for same comprises a hollow member which may be detachably connected to the preformed channel provided in the tooth, separate conduit members for communicating with the external suction source and the liquid supplying source respectively, and a coupling member for connecting each of the conduits to the hollow member such that both the external suction source and the liquid supplying source each communicates with the pulp canal for extraction of the pulp in the latter.

3,704,521

INSTRUMENT FOR CHECKING LINE OF CONTACT OF SPUR GEARS FOR STRAIGHTNESS AND NOMINAL DIRECTION

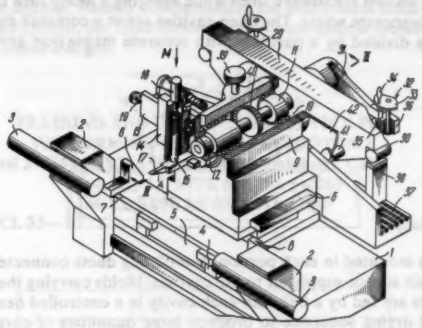
Lev Arkadievich Arkhangelsky, and Ljubov Mikhailovna Semenova, both of Moscow, U.S.S.R., assignors to Bjuro Vzaimozamenyaemosti V. Metalloobrabatyvajuschei Promyshlennosti, Moscow, U.S.S.R.

Filed Sept. 2, 1969, Ser. No. 854,611

Int. Cl. G01b *3/20, 5/20*

U.S. Cl. 33—179.5 R **3 Claims**

Method and apparatus for checking the line of contact of helical gears in which a measuring carriage with a tangential measuring instrument acts on a measuring head, when the carriage is moving along a guide, to move the head through an angle equal to the spiral angle on the pitch cylinder of the gear being measured. The apparatus also comprises a removable blade for determining the point on the edge of the tangential



measuring instrument which contacts the line of contact at the pitch cylinder of the gear.

3,704,522

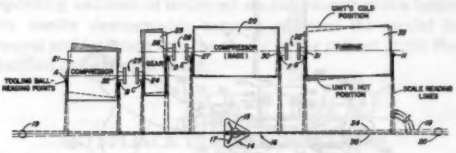
METHOD AND APPARATUS FOR OPTICAL ALIGNMENT OF INDUSTRIAL EQUIPMENT

Robert L. Blubaugh; Robert A. Ruckle, and Hubert J. Watts, all of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. Nos. 702,478, Feb. 1, 1968, abandoned, and Ser. No. 836,503, June 25, 1969. This application Jan. 19, 1970, Ser. No. 3,968

Int. Cl. G01c *21/00*

U.S. Cl. 33—286 **7 Claims**



A method and apparatus for aligning kinematic trains of industrial apparatus by optical metrology, the method including the steps of establishing a reference line of sight adjacent the devices in the kinematic train and extending generally parallel to the train, then obtaining precise measurements to the shortest distance to the reference points on the several devices by optical measurements. The measurements are made when the apparatus is in a cold, inoperative state. Then, after the apparatus has become heated and is in operation, a reference line of sight is again established adjacent the devices in the kinematic train, and then the shortest distance is then measured from the line of sight the same reference points on the devices that were used in obtaining the cold measurements. Comparison of the sets of hot and cold measurements is then made to determine the shift or change in position of the devices relative to each other which has occurred in the course of the operation of the apparatus.

3,704,523

MICROWAVE DRYER FOR CERAMIC ARTICLES

Michel Henri Guerga, Clichy sous Bois, and Bernard Lucien Desire Hallier, La Varenne, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 11, 1971, Ser. No. 105,391

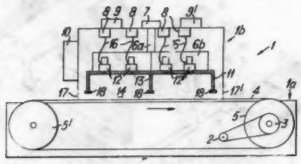
Claims priority, application France, Jan. 14, 1970, 7001187

Int. Cl. B01k *5/00*

U.S. Cl. 34—1 **9 Claims**

A process and an apparatus are provided for drying molded ceramic objects using a combination of microwave heating

and air ventilation. The objects are heated rapidly in a first microwave cavity oven while applying a relatively light flow of air. The objects are then maintained at a constant temperature in a second microwave oven while applying a heavy flow of air to evaporate water. The oven cavities are in a common enclosure divided by a partition with separate magnetron generators mounted in each portion. Ventilating ducts connected to an air source supply air to the cavities. Molds carrying the objects are fed by a belt into each cavity in a controlled heating and drying sequence to produce large quantities of ceramic objects with minimum cracking and warping. The power and space requirements are also reduced.



3,704,524

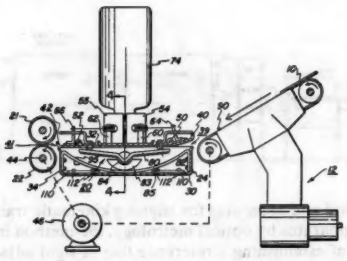
APPARATUS FOR DEVELOPING LATENT ELECTROSTATIC IMAGES

Roman C. Kamola, North Rose; Michael A. Vince, Penfield; Robert W. Gundlach, Victor, and Kenneth W. Gunther, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 874,423, Nov. 6, 1969, abandoned. This application March 1, 1971, Ser. No. 119,775

Int. Cl. F26b *19/00*

U.S. Cl. 34—56 **4 Claims**



Vapor fusing apparatus comprising a substantially enclosed chamber having ingress and egress openings associated therewith. A solvent soluble powder image, formed on a support member, is delivered to the chamber through the ingress opening, the image being fused to the support member by solvent vapor generated in the chamber. The support member, after the image is fused thereto, exits from the chamber through the egress opening. The ingress and egress openings of the chamber are located above the level of maximum concentration of the solvent vapor generated in the chamber to minimize vapor loss to the atmosphere. The support member is under continuous and positive control during the fusing operation.

3,704,525

MATERIAL COOLER WITH RECYCLING OF COOLING GAS

Daniel T. Devel, Le Perreux, France, assignor to Fuller Company, Catasauqua, Pa.

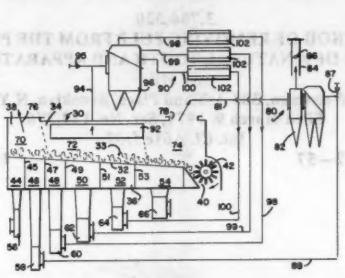
Filed Oct. 27, 1971, Ser. No. 193,027

Claims priority, application France, Nov. 6, 1970, 7040103

Int. Cl. F26b *9/00*

U.S. Cl. 34—164 **10 Claims**

A cooler for hot material such as cement clinker with an arrangement for recycling cooling air. The cooler includes a housing divided into an upper material chamber and a lower plenum chamber by a gas permeable grate which supports and advances the material through the material chamber. Ambient cooling air is blown through the hottest and the coolest material. Two air recirculation circuits are employed. The ambient air blown through the coolest material is divided so that a portion goes to each recirculation circuit. One recirculation circuit returns air to the plenum chamber at a point where it will pass through the material to be cooled and then be conducted to the furnace. The other recirculation circuit returns air to the plenum chamber at points where it will pass through the material and some of it will be conducted to a furnace, while the remaining air will be returned to the recirculation circuit. An indirect heat exchanger is mounted in one of the recirculation circuits.



3,704,526

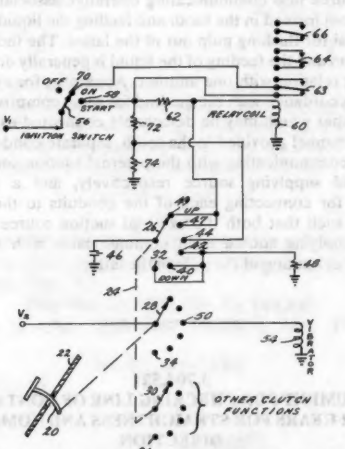
RC CLUTCH STALL CIRCUIT FOR A DRIVER-TRAINER SIMULATOR

Wayne W. Frame; Roy A. Gustavson, and James Wiltse, all of Michigan City, Ind., assignors to Aetna Life & Casuality

Filed Dec. 23, 1970, Ser. No. 101,085

Int. Cl. G09b *9/02*

U.S. Cl. 35—11 **10 Claims**



A method and apparatus for use in a driver trainer simulator of the type wherein a clutch pedal is provided for operation by the student under simulated driving conditions. In the embodiment described below, the clutch pedal is mechanically linked to a plurality of switches which each sequentially connect to a number of associated contacts as the pedal is pressed and released. One of these contacts is associated with the point at which the clutch pedal would be engaged in a conventional vehicle and when the switch is connected to this contact an associated capacitor is charged through a resistive network. The

next contact encountered by the switch as the now engaged clutch pedal is further released connects the charged capacitor across a relay coil so that the relay remains activated only if the rate at which the clutch pedal was released through the friction point was slow enough for the capacitor to charge to a given level. Thus deactivation of the relay coil represents a popped clutch and causes controlled switches to produce an indication on the simulator that a stall condition has been produced.

3,704,527

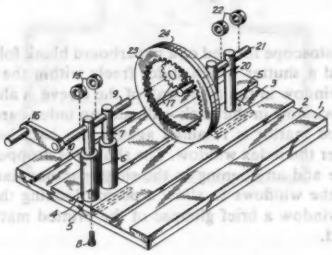
MECHANICAL TRANSFER TEACHING SYSTEM WITH UNIVERSAL MOUNTINGS

Stephen A. Berkman, 68 Barnsdale Rd., Wayne, N.J.

Filed April 6, 1970, Ser. No. 25,751

Int. Cl. G09b *25/02*

U.S. Cl. 35—13 **2 Claims**



A mechanical transfer teaching system including a planar base having a plurality of parallel grooves therein, a plurality of shaft support bases slidably disposed within and interlocked with said grooves, one or more shaft supports perpendicular to each shaft support base and rotatably attached thereto, which shaft support base and shaft support serve as a universal mounting to which mechanical transfer elements can be interchangably attached.

3,704,528

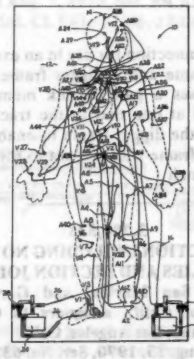
DISPLAY DEVICE FOR AN ANIMAL CIRCULATION SYSTEM

Raymond J. Lewis, 9802 Lincoln Avenue, Apt. U6, Anaheim, Calif.

Filed Aug. 17, 1970, Ser. No. 64,247

Int. Cl. G09b *23/28*; G09f *13/24*

U.S. Cl. 35—17 **1 Claim**



A display device for an animal circulation system having a sheet material base in the form of a likeness of the animal, locating a first transparent fluid conducting tube system upon the base to represent the blood circulation arteries of the animal, locating a second transparent fluid conducting tube system upon the base to represent the blood circulating veins of the animal, visually differentiating the first system from the second system, the fluid flowing within each system including both liquid and gas.

3,704,529

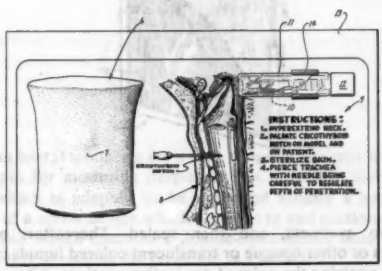
TRAINING AND INSTRUCTION DEVICE FOR PERFORMING CRICOTHYROIDOTOMY

Forrest J. Cioppa, 3346 Vaughn Road, Lafayette, Calif.

Filed July 13, 1970, Ser. No. 54,283

Int. Cl. G09b *23/30*; A61b *17/00*

U.S. Cl. 35—17 **4 Claims**


INSTRUCTIONS :
1. HYPEREXTEND NECK.
2. PALPATE CRICOTHYROID NOTCH ON MODEL AND ON PATIENT.
3. STERILIZE SKIN.
4. PIERCE TRACHEA WITH NEEDLE BEING CAREFUL TO REGULATE DEPTH OF PENETRATION.

A training and instruction device for performing a cricothyroidotomy on a patient having an upper airway obstruction and including an anatomical model of the human throat formed with a cricothyroid notch for visual and tactile instruction of the location of the cricothyroid notch and the corresponding anatomical landmark on the patient, and a hollow bore needle demountably secured adjacent the model for removal and insertion into the throat of the patient at the thus identified cricothyroid notch.

3,704,530

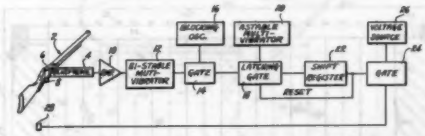
ANTI-FLINCH TRAINING APPARATUS

Gary N. Arenson, 6717 Anders Terrace, Springfield, Va.

Filed June 14, 1971, Ser. No. 152,691

Int. Cl. F41g *3/26*

U.S. Cl. 35—25 **5 Claims**



A microphone on a firearm detects the fall of the hammer and a pulse output is processed to be passed only as a result of closure of a randomly operated gate. A pulse passing through said gate encounters a selectively variable delay then directs a voltage pulse to a trainee operating the rifle, to provide a stimulus to simulate the recoil of the weapon.

3,704,531

NATURE ART WOOD GRAIN PAINTING KIT

Calvin L. Seals, P.O. Box 424, Daphne, Ala.

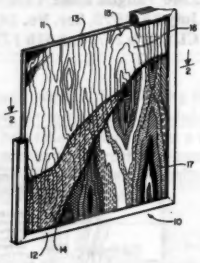
Filed Oct. 23, 1970, Ser. No. 83,316

Int. Cl. G09b *11/04*

U.S. Cl. 35—26 **8 Claims**

A method of making an abstract picture which involves preparing a wood panel or wood section for application of dif-

ferently colored coatings thereto. The surface of a wood panel; such as in plywood, has a multiplicity of irregular shape and size sections defined by distinctive, irregular wood graining. Dependent upon the cutting angle of a solid piece of wood, the cut section may provide a surface with a distinctive, somewhat regular line pattern from the age or year lines of the growth of a tree. The surface of the wood panel or wood section may further be sand blasted to give unique depth and contour irregularity, which can then be sealed. Conversely, the pores of the surface of the wood panel or sections may be



filled to evenness, and then sealed. Thereafter, paints, lacquers or other opaque or translucent colored liquids can be used in applying the colored decorative coatings. Alternatively, colored pieces of paper, plastic, wood or metal materials may be cut respectively to be applied to sections within the outline defined by the graining. The unique, self imaginative, colored art creation could then be framed and hung. Furthermore, a kit may be provided which contains paints, brushes, wood panels and/or sections of different cuts and periphery shapes for making wood grain art pictures.

3,704,532

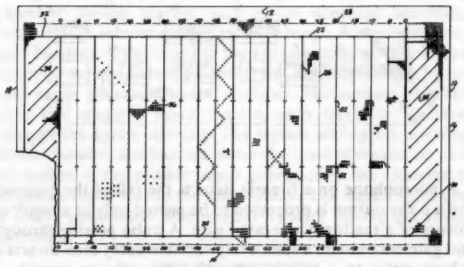
CHART BOARD AND METHOD FOR DEMONSTRATING BAND FORMATIONS AND MANEUVERS

Richard W. Dambach, 618 N. Cherry Street, Kenton, Ohio

Continuation of Ser. No. 715,219, March 22, 1968, abandoned. This application March 13, 1970, Ser. No. 19,479

Int. Cl. G09b 1/10

U.S. Cl. 35—29 R **3 Claims**



A chart board for teaching marching band formations and maneuvers on a football field. The board has a planar surface inscribed with indicia simulating a football field. Openings are provided on the surface of said board to receive pegs representing the band members. The spacing between the openings is scaled and correlated to the indicia on the board to duplicate an average marching interval or step on the football field.

3,704,533

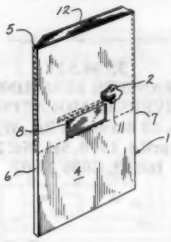
TACHISTOSCOPE

Raymond B. Weber, Oconomowoc, Wis., assignor to Milprint, Inc., Milwaukee, Wis.

Filed June 24, 1970, Ser. No. 49,373

Int. Cl. G09b 17/04

U.S. Cl. 35—35 B **3 Claims**



A tachistoscope formed of a paperboard blank folded into a sleeve and a shutter which slides freely within the sleeve. A viewing window in the front wall of the sleeve is aligned with an index window in the back wall, and an index card containing printed matter is retained against the back wall of the sleeve over the index window. The shutter is dropped through the sleeve and an opening in the shutter momentarily passes between the windows to allow a person looking through the viewing window a brief glimpse of the printed matter on the index card.

3,704,534

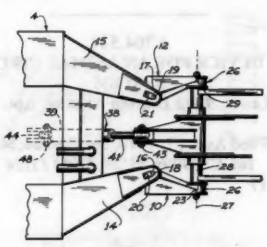
ARTICULATED LINKAGE CONNECTION FOR AN EXCAVATING MACHINE

Hans L. Preu, Huron, Ohio, assignor to American Hoist and Derrick Company, St. Paul, Minn.

Filed Aug. 12, 1970, Ser. No. 63,234

Int. Cl. E02f 5/06

U.S. Cl. 37—83 **5 Claims**



An articulated connection for use in an excavating machine having a tractor frame and a digger frame. The articulated connection comprises a pair of link members each being pivotally connected at one end to the tractor frame and at their other ends to the digger frame to enable shifting movement of the tractor frame with respect to the digger frame for digging a curved trench.

3,704,535

SIGN CONSTRUCTION INCLUDING NOVEL SECTION ASSEMBLIES AND SECTION JOINDERS

Hugh V. Penton, San Marino, and Gerald P. Dunphy, Anaheim, both of Calif., assignors to California Metal Enameling Company, Los Angeles, Calif.

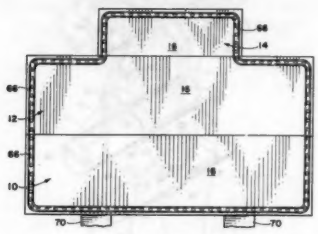
Filed Aug. 13, 1970, Ser. No. 63,543

Int. Cl. G09f 7/20

U.S. Cl. 40—125 K **6 Claims**

A plurality of sign various sizes of sections are similarly formed so that a plurality of selected sign sections may be

positioned vertically and/or horizontally abutting such as a lower first and intermediate second both secured to spaced, vertical ground supporting posts and the intermediate second and an upper third both secured to spaced, vertical tying members. Each sign section has spaced, front and rear, sheet-like face panels adhesively secured internally to a honeycomb core and at edge portions to upper, lower and side border members extending between the face panels. Each sign section has opposite unitary border members having in transverse cross section upper U-shaped and lower inverted U-shaped portions vertically spaced by a central vertical portion, a longitudinally extending, C-shaped chamber being formed between the upper and lower portions and rearwardly of the vertical portion opening rearwardly through a vertically intermediate, horizontal slot formed by flange extensions of the



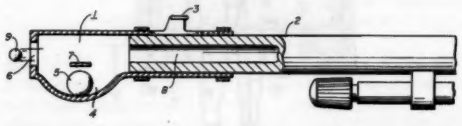
upper and lower portions. These C-shaped chambers are dimensioned for slidably and nonrotatably receiving heads of fastening bolts therein through enlarged slot openings with shanks of the bolts projecting rearwardly through the slots for securement to the ground supporting posts or tying members or both. In vertically abutting sign sections, the side border members are vertically extending and outwardly opening, U-shaped cross section extending vertically upwardly covering end extremities of the upper border members with water drain openings being formed through the side border members horizontally into the upper portions of the upper border members. Between abutting sign sections, H-shaped cross section alignment members are positioned partially in each of the opposed open border member portions retaining alignment between the abutting sign sections.

3,704,536

GUN SAFETY DEVICE

Henry J. Kratt, 6633 S. Birmingham, Tulsa, Okla.

Filed Aug. 7, 1970, Ser. No. 61,924
Int. Cl. F41c *17/06, 17/08*
U.S. Cl. 42—1 R **3 Claims**



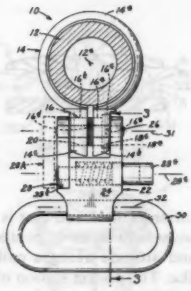
In combination with the barrel of a gun, a gun safety device comprising a chamber with a obstructing object therein, the said chamber being constructed in such a manner so as to allow the movement of the obstructing object into the path of a projectile traveling in the gun barrel when the barrel of the gun is in any position but approximately horizontal.

3,704,537

GUN BARREL MOUNTING FOR SLING SWIVEL

Preston V. McKinzie, Auburn, Calif., assignor to Michaels of Oregon Co., Portland, Oreg.

Filed Jan. 14, 1971, Ser. No. 106,473
Int. Cl. F41c *23/02*
U.S. Cl. 42—85 **6 Claims**



A gun barrel mounting for a sling swivel of the type having a hinge pin for mounting purposes. The mounting includes a band which is adapted to be tightened around a barrel by means of a screw device which attaches to end portions in the band, and which contains a double-open-ended bore that is sized freely to receive the hinge pin in a swivel.

ERRATUM

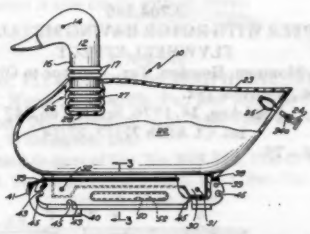
For Class 43—135 see:
Patent No. 3,704,981

3,704,538

WATERFOWL DECOY

Kenneth M. Gagnon, 302 Reservoir Avenue, Lincoln, R.I.

Filed June 15, 1971, Ser. No. 153,367
Int. Cl. A01m *31/06*
U.S. Cl. 43—3 **7 Claims**



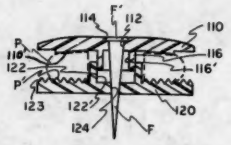
An air inflatable waterfowl decoy comprised of separable head and body portions. The head portion has a neck having annular ridges formed adjacent its bottom. The body portion is a flexible shell having a neck socket formed along its top forward area. A plurality of vertically spaced annular recesses are formed within the neck socket for matingly engaging the annular ridges on the neck to position the head of the decoy at a plurality of different vertical locking positions. Formed integrally and internally within the shell is a valve seat sleeve into which is inserted the plug valve used to inflate the body portion. A keel positioned along the bottom surface of the body portion has grooves at opposite ends for receiving an anchor line wound therearound when the decoy is not in use. It also has identical cavities at its opposite ends so that a mating protuberance on the anchor weight may be lockingly received at either end of the keel. The keel may also be detachable; thus the decoy can be used on land as well as upon water.

3,704,539

POISON BAIT STATION FOR SMALL BUGS OR THE LIKE

Bernard V. Alvarez, Route 1, Box 32, Inman, S.C.

Filed Oct. 12, 1971, Ser. No. 188,167
Int. Cl. A01m *1/20*
U.S. Cl. 43—131 **22 Claims**



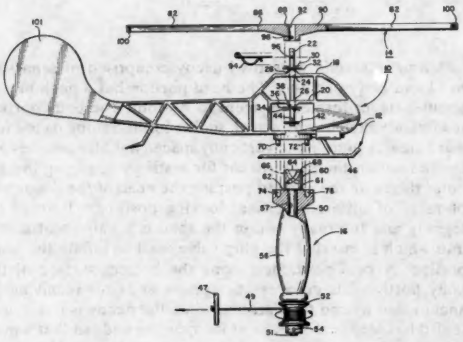
A poison bait station is disclosed that is capable of deployment within the household so as to position a poison at any desired location and attitude along a path used by roaches, ants, bugs or the like. The poison station of the present invention is designed to prevent access to the poison by children or dogs, cats or other pets; to permit installation at virtually any desired location; and to maintain the poison in place during use without the danger of inadvertent spreading of the poison. The instant poison station comprises a cover that may be of unitary or two piece construction, said cover having a centrally located member secured thereto and depending therefrom, around which a unitary poison tablet, gel or the like is positioned and secured. A fastening member and/or a pressure sensitive adhesive are incorporated into the design to permit semi-permanent securement of the station to virtually any surface. Furthermore, the cover is preferably transparent whereby one can visually inspect the device from time to time to determine whether any poison remains therein. Spacers may also be provided around the cover to limit the degree of securement of the station while simultaneously determining the size of the opening under the cover through which the bug, etc. may pass to reach the poison. A shield may also be made a part of the station to permit outside use where the poison is disposed in a vertical plane.

3,704,540

HELICOPTER WITH ROTOR HAVING METAL RING FOR FLYWHEEL EFFECT

Roland P. Montagu, Houston, Tex., assignor to Olympic Overseas, Inc., Houston, Tex.

Filed Aug. 24, 1970, Ser. No. 66,247
Int. Cl. A63h *27/12, 27/14*
U.S. Cl. 46—75 **1 Claim**



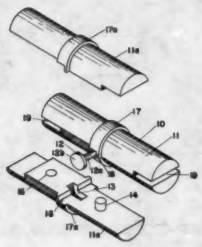
A toy helicopter having a rotating bladed wheel with a spindle extending from the center and a launcher detachably receiving the spindle for transmitting rotational movement thereby storing kinetic energy in the wheel. At the end of the transmitted rotational movement, the toy is automatically ejected from the launcher and becomes airborne. A fuselage of desired configuration and with suitable landing gear is rotatably mounted on the spindle to allow the wheel to freely spin relative to the fuselage during both the launching movement and flight.

3,704,541

TUBULAR MAZE TOYS

Robert Arthur Kennedy, 600 Hamilton Street, Stoughton, Wis.

Filed Aug. 11, 1971, Ser. No. 170,704
Int. Cl. A63h *33/10*
U.S. Cl. 46—26 **3 Claims**



An instructional toy for building multidimensional circular and arcuate structures which suggest non-circular configurations in appearance. The toy has a plurality of substantially elongated flexible but resilient arcuate elements and a plurality of multiple connecting devices for linking the arcuate elements end-to-end and tangentially.

3,704,542

DOLL

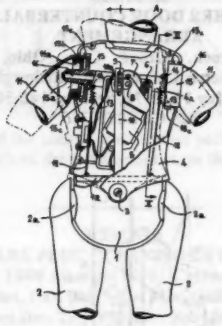
Bernard Suchowski, Howard Beach, N.Y., assignor to Alsu Development Corporation, Queens County, N.Y.

Filed July 1, 1970, Ser. No. 51,486
Int. Cl. A63h *11/00*
U.S. Cl. 46—135 R **9 Claims**

A doll hollow body includes a turnable head having an opening in its top and a lock of hair extends through the opening and is retracted by a rubber band extending between the lock of hair and a leg outer end. The lock of hair passes through a pair of eccentric openings in superimposed clamp plates in the head; one plate being affixed to the torso and the other to the head so that turning of the head opens and closes

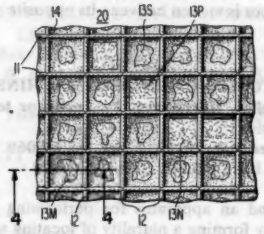
the aperture delineated by the plate openings to alternatively lock or release the lock of hair. A stop is provided to limit the maximum extension of the hair.

3,704,543
WALKING DOLLS
Germain Giroud, Moingt-par-Montbrison, Loire, France
Filed July 27, 1971, Ser. No. 166,407
Claims priority, application France, Aug. 5, 1970, 7029608
Int. Cl. A63h *11/14*
U.S. Cl. 46—150 4 Claims



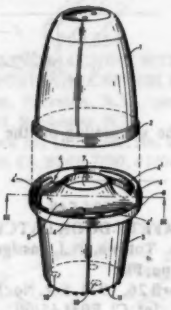
A walking doll of the kind in which the upper part of the body receives an alternate lateral rocking movement in relation to the lower part bearing the legs, characterized in that said lower part is connected to arms which are mounted pivotally on the upper part, in such manner that said arms receive an alternate angular displacement in synchronism with the pivoting of the legs.

3,704,544
GROUND COVER SHEET
Abram N. Spanel, Princeton, N.J., and Roy P. Terry, Jr., Columbus, Ga., assignors to Abram N. Spanel, a part interest
Filed Sept. 28, 1970, Ser. No. 75,930
Int. Cl. A01g *1/00*
U.S. Cl. 47—9 3 Claims



A ground cover sheet for protection against soil erosion is provided with a plurality of recesses, portions of which are moisture-permeable for controlled flow of water through the permeable portions to the soil beneath. The recesses are formed by the strands of an open mesh web adhesively secured to a relatively thin paper-tissue, preferably of the wet-strength type, the adhesive itself being a plant food and which may contain added fertilizer for feeding plants.

3,704,545
PLASTIC CONTAINER FOR BULBOUS PLANTS
George Leonardus Johannes Van Reisen, Hoofdstraat 307, Sassenheim, Netherlands
Filed April 21, 1970, Ser. No. 30,426
Int. Cl. A01g *9/02*
U.S. Cl. 47—34.11 8 Claims



A plastic container for bulbous plants is disclosed comprising an opaque pot for the bulb and the surrounding earth, a resilient coupling rosette that acts as a lid for the pot and retains the bulb and the earth in the pot at any moment and a transparent cover mounted or mountable over the pot and — if mounted — coupled to the rosette and thus directly to the pot.

The coupling rosette preferably has a central part provided with a growing aperture.

The transparent cover both acts as a protection of the green parts of the bulbous plant during transport and as a hot house after delivery at the customer.

In a preferred embodiment the couplings between both the pot and the rosette and between the rosette and the cover are rotationally symmetrical in order to be mechanically achievable.

The container is also useful without cover.

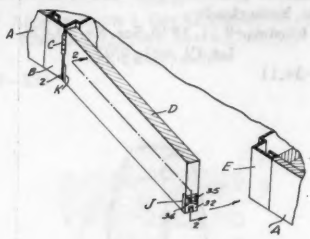
3,704,546
SYMBIOTIC FIXATION OF ATMOSPHERIC NITROGEN
Ralph W. F. Hardy, Unionville, Pa., and Richard D. Holsten, Wilmington, Del., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.
Continuation-in-part of Ser. No. 805,382, March 7, 1969, abandoned. This application June 4, 1971, Ser. No. 150,179
Int. Cl. A01h *17/00*
U.S. Cl. 47—58 3 Claims

inoculated cells from plants are caused to grow aseptically in a synthetic liquid culture medium to produce a mass of undifferentiated plant cells. These are aseptically incoculated with a symbiotic microorganism to produce a synthetic symbiotic system that is capable of fixing atmospheric nitrogen. The end product contains available protein material.

3,704,547
AUTOMATIC CLOSURE SEAL
Robert A. Hansen, Katonah, N.Y., and Lewis A. Jerchower, Paramus, N.J., assignors to Pioneer Industries, Division of SOS Consolidated, Inc.
Filed May 2, 1969, Ser. No. 828,078
Int. Cl. E06b *7/20*
U.S. Cl. 49—308 4 Claims

The present closure seal is mounted completely along an edge of a closure such as a door, window or the like and with

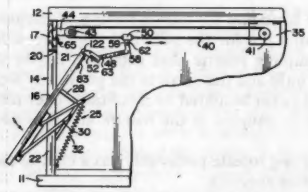
the closure in its open position, the seal is spaced from a sill, but upon the closure being in its closed position, the seal automatically engages the sill sealing off the space between the closure and the sill.



3,704,548
SAFETY DOOR LATCH

Edward A. Wiegleb, Totowa, N.J., assignor to The Celotex Corporation, Tampa, Fla.

Filed April 26, 1971, Ser. No. 137,510
Int. Cl. E05f *15/00*
U.S. Cl. 49—199 **4 Claims**

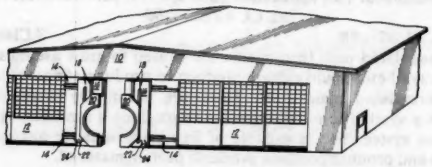


A novel door latch is provided in which a catch element is secured to the inside of a door lintel and a pivotal latch finger engages and is disengaged from the catch by the operating arm which opens and closes the door.

3,704,549
AUXILIARY DOOR FUSELAGE CLOSURE

Everette G. McGhee, 4917 N.W. 34th Street, Oklahoma City, Okla.

Filed March 22, 1971, Ser. No. 126,449
Int. Cl. E06b *3/42*
U.S. Cl. 49—370 **15 Claims**

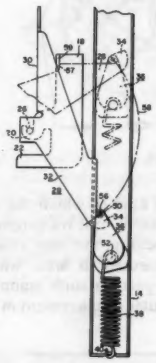


The present invention contemplates a closure having primary utility for creating a snug fit between a hangar door and the tail section of an aircraft which projects through the door. In one embodiment, the invention includes carrier support means which are fixed to the hangar door on two opposing sections thereof. Secured to the carrier support means on each side of the opening in the hangar door are aperture carriers, each of which is mounted for movement on the support means toward and away from the other aperture carrier. A slot is formed in the abutting edges of each of the carriers so that when the carriers are adjacent each other, a continuous opening of generally circular cross-sectional configuration is created. Sliding vertically along support means mounted on each of the aperture carriers is an aperture frame which has a semicircular cutout formed thereon to register with the slot formed in the aperture carriers. As in the case of the aperture carriers, the semicircular cutouts formed in the aperture frames are so situated in each of the frames that when the frames abut a circular opening through the planes thereof is formed. Motive means are provided for moving the aperture frames vertically upward and downward with respect to the aperture carriers while similar motive means are provided for moving the aperture carriers toward and away from each other.

3,704,550
DISHWASHER DOOR COUNTERBALANCE ARRANGEMENT

Charlie L. Hancock, Grove City, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 11, 1971, Ser. No. 142,307
Int. Cl. E05f *1/10*
U.S. Cl. 49—386 **10 Claims**



Tension springs for counterbalancing a swing-down dishwasher door are nested in outwardly-open, channel-shape support legs for the dishwasher tub, and pivotal connector means which slide along the legs connect the upper ends of the springs to the ends of the lever arms of the dishwasher door bracket so that the springs will be elongated only along their axes and the connectors will pivot to accommodate the varying perpendicular distances between each spring axis and points on the path of movement of the end portion of the lever arm when the door is moved between its opposite positions.

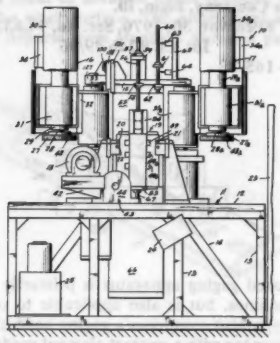
3,704,551
AUTOMATIC GRINDING MACHINE

Charles L. Mueller, Harrisburg, Pa., assignor to TRW Inc., Cleveland, Ohio

Filed Aug. 26, 1970, Ser. No. 67,069
Int. Cl. B24b *7/00, 9/00, 5/00*
U.S. Cl. 51—5 **10 Claims**

A method and an apparatus for performing the method characterized by forming a plurality of locating surfaces on a workpiece during a grinding cycle, positioning a new workpiece and repeating the grinding cycle to form identical locating surfaces thereon. The apparatus utilizes a control means which moves grinding wheels across their respective dress blocks in a predetermined sequence during each cycle prior to grinding the workpiece. The control means then actuates feed means on each of the grinding wheels to advance the respective grinding wheels in a predetermined axial distance for a subsequent dressing during the next grinding cycle and the control means positions a new workpiece in position relative

to the dress blocks for a new grinding cycle. The apparatus utilizes a workholder which holds three workpieces in spaced

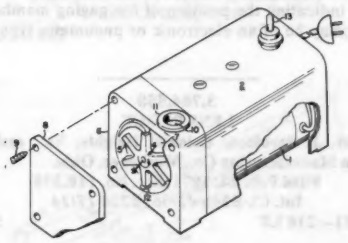


relationship and the control means after performing the grinding cycle on each of the workpieces stops the operation of the machine.

3,704,552
SPARK PLUG CLEANING DEVICES

Bud K. Beaver, 1040 Alameda Blvd., Coronado, Calif., and A. David Zakarian, P.O. Box 7, Del Mar, Calif.

Filed Dec. 21, 1970, Ser. No. 100,225
Int. Cl. B24c *3/00*
U.S. Cl. 51—9 **6 Claims**

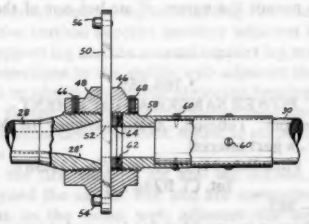


In a spark plug cleaning device to remove carbon, sulphur, oxides, oil and other deposits from spark plug electrodes an electric motor drives an impeller which imparts mechanical energy to abrasive particles which are directionally controlled to impinge against the electrodes of the spark plug.

3,704,553
NOZZLE CONTROL VALVE FOR SANDBLASTING AND LIKE SPRAYING APPARATUS

Laverne F. Hehr, 12600 S.E. 87th Ave., Portland, Oreg., and Raymond E. Campbell, 1306 S.E. 37th Ave., Milwaukie, Oreg.

Filed Oct. 16, 1970, Ser. No. 81,319
Int. Cl. B24c *7/00*
U.S. Cl. 51—11 **7 Claims**

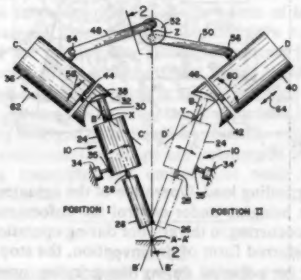


A gate valve is interposed in the delivery line between a spray nozzle and a source of air under pressure, in an area of minimum flow velocity. A threaded opening through the valve body intercepts the valve slide and connects opposed coupling members which slidably confine the slide between them. In one embodiment the coupling members are a nozzle and a hose collar, and the slide is manually adjustable. In a second embodiment the coupling members are a pair of adapters which connect the valve between sections of the delivery line, and the valve slide is adjustable by a power unit driven by air under pressure from said source.

3,704,554
LENS PROCESSING MACHINE WITH MOVABLE WORKPIECE SPINDLE

George J. Laughman, Perinton, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed April 26, 1971, Ser. No. 137,386
Int. Cl. B24b *7/00, 41/06*
U.S. Cl. 51—55 **9 Claims**



A machine has a plurality of generally fixed work-tool heads for performing multiple operations upon lens material to form a lens at a common mounting block disposed upon a movable, for example pivotal, workpiece spindle. The plurality of work-tool heads are generally stationary relative to the exemplary pivotal workpiece spindle. The provision of the common mounting block reduces operational time for manufacturing a spherical or plano lens by eliminating the need for mounting, dismounting and remounting the lens at each of different and separate operational stations. Runout of the optical axis of the formed lens surface due to remounting is thereby eliminated and is a significant factor in reducing machine operating time and reducing tool wear. The work-tool heads have spindles which carry, for example, tools for generating, lapping, edging and/or polishing a lens. The lens material is carried by the exemplary pivotal workpiece spindle about a fixed pivot point to move in an arcuate path between the work-tools heads to dispose the axis of the workpiece spindle to intersect the axis of each work-tool head, respectively, at a fixed pivot point irrespective of the design parameters of the lens. After alignment of each of the axes to its respective fixed pivot point the lens material is linearly moved, respectively, toward each work-tool which is, in turn, cooperatively linearly moved toward the lens material to engage and perform an operation upon the lens material.

3,704,555
PRECISION DISK GRINDER

Ray C. Millett, Costa Mesa, Calif., assignor to Marina Industries, Inc.

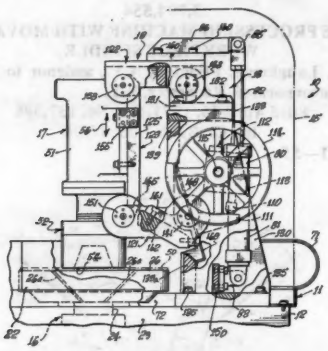
Filed June 10, 1971, Ser. No. 151,815
Int. Cl. B24b *7/04*
U.S. Cl. 51—132 **19 Claims**

A grinder for producing a precise planar surface on a workpiece, the grinder being of the general type in which the chuck carrying the workpiece and the shaft carrying the grinding wheel are rotated about axes which are perfectly parallel to one another and perfectly normal to the desired planar surface. In the grinder of the invention, a grinding system, com-

prising a grinder motor and a grinding wheel, is mounted on a parallelogram linkage to be movable along the rotational axis of the grinding system.

A resilient actuator means urges the grinding system into grinding engagement. Preferably, the actuator means is a pneumatically cushioned hydraulic cylinder, and the pressure is adjustable to aid in adjusting to a predetermined grinding load.

The actuator means is opposed by an adjustable stop. The stop may be adjusted to precisely locate the plane of applica-



tion of the grinding load. Operation of the actuator against the stop aids in bringing under control the deformation and displacement occurring in the grinder during operation.

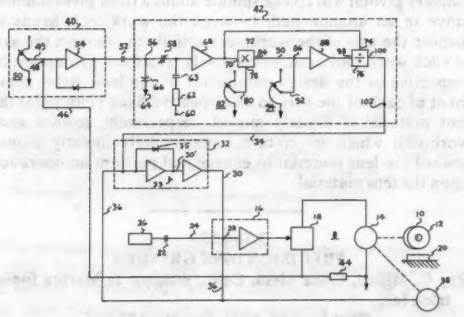
In the preferred form of the invention, the stop and/ or actuator may be adjusted during the grinding operation. In a further refinement of the preferred form, the grinder includes a continuous grinding load indicating means and a timer or clock for indicating the time period of application of each grinder load stage. Production of the desired surface on the workpiece is achieved by adjustment during grinding according to a predetermined load-time program.

3,704,556

SPEED ADJUSTING SYSTEM FOR GRINDING WHEEL DRIVES AND THE LIKE

Robert Joseph Nedreski, Erie, Pa., assignor to General Electric Company

Filed Dec. 22, 1971, Ser. No. 210,771
Int. Cl. B24b *5/00*
U.S. Cl. 51—134.5 R **12 Claims**



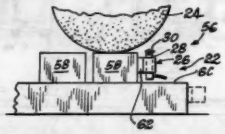
Apparatus and method for adjusting the operating speed of a driven member of variable diameter, such as a grinding wheel, to provide a predetermined peripheral speed. The incremental current required to accelerate the member at a predetermined rate is sensed and utilized to establish a program speed, and the established program speed is thereafter utilized along with actual speed to maintain operation at the program speed.

3,704,557

MACHINE TOOL AND GAGING APPARATUS

Edward Peonski, West Dundee, Ill., assignor to American Gage & Machine Company, Elgin, Ill.

Filed Nov. 30, 1970, Ser. No. 93,633
Int. Cl. B24b *49/00*
U.S. Cl. 51—165.75 **18 Claims**



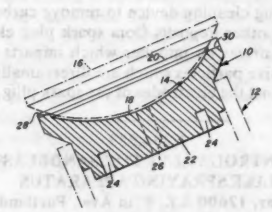
The disclosed gaging apparatus is primarily applicable to grinding machines, but is also applicable to other machine tools. The apparatus comprises a gaging head having a movable gaging member with a contact element made of extremely hard material for direct engagement with grinding wheel. Such engagement moves the gaging member to a position corresponding to the size of the workpiece after being ground by the wheel. The gaging head is provided with a clamping magnet or other device for mounting the gaging head on the workpiece or the work support. Retaining means are provided to hold the movable gaging member in any position to which it may be moved, such retaining means preferably providing frictional resistance to movement of the gaging member. The retaining means may comprise a magnet to produce a retaining force or a frictional spring acting between the gaging member and the gaging head. An indicator is provided for precisely indicating the position of the gaging member. Such indicator may be of an electronic or pneumatic type, for example.

3,704,558

LENS BLOCK

George M. J. Sarofeen, Colonial Heights, Va., assignor to Coburn Manufacturing Co., Muskogee, Okla.

Filed Feb. 24, 1971, Ser. No. 118,318
Int. Cl. B24b *41/06*; B22d *17/24*
U.S. Cl. 51—216 LP **5 Claims**



A lens block for plastic lens having a circumferential lens blank supporting ledge which is provided with a pair of diametrically opposed vents or grooves. One of the grooves is of a size to permit the egress of air but not of the blocking material.

3,704,559

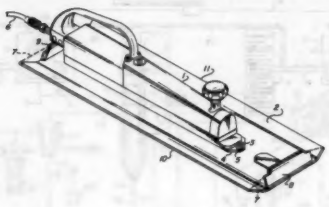
POWER SANDER ATTACHMENT

Andrew Morgan, Tolleson, Ariz., assignor to Manuel M. Leyva, Jr., a part interest

Filed Feb. 11, 1971, Ser. No. 114,587
Int. Cl. B24d *17/00*
U.S. Cl. 51—382 **4 Claims**

An attachment is provided for heavy duty power sanders, such as the air operated types utilized in automotive body shops, which facilitates sanding the sculptured portions of a

car body. The attachment consists of a generally rectangular plate faced, on its lower surface, with a resilient material and provided with spring clasps at both ends of the upper surface for clasping a sheet of abrasive paper between the resilient surface and the work surface. The attachment according to the invention departs from standard abrasive paper holding



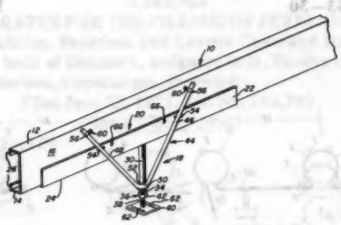
plates in that each of its long edges is turned up at an angle which, in variant embodiments, may be the same or different on each side and range from approximately 7° to 60°. The angled lips back the abrasive paper in such a manner that the sanding operation tends to follow a sculptured surface rather than bite into it.

3,704,560

SUPPORT ASSEMBLY

George D. Ratliff, Jr., Churchill Borough, Pa., assignor to United States Steel Corporation

Filed June 18, 1971, Ser. No. 154,518
Int. Cl. E04g *25/04*
U.S. Cl. 52—122 **22 Claims**



A support assembly for a C-beam having a top flange and a bottom flange integrated by a beam web is disclosed.

The support assembly has a saddle having a saddle web in engagement with the beam web along a portion of the beam web and a saddle flange supporting the bottom flange. Retaining means connect the bottom flange to the saddle flange. A vertical support member is disposed adjacent the saddle flange and has a free end. Elevating means are on a foundation and are engageable with the free end of the support member to reciprocate the saddle and the C-beam with respect to the foundation. A V-shaped support member has a first support leg and a second support leg terminating in a vee. The vee is affixed to the vertical support member adjacent its free end. The first support leg and the second support leg are connected at first connections to the saddle web adjacent the top of the saddle web to obtain maximum projected bearing area along the saddle flange for the bottom flange, and such legs pass through the shear center of the C-beam to minimize torsion in the C-beam.

Further, the first support leg and the second support leg project beyond the saddle web and are connected at second connections to the beam web adjacent the top flange to strengthen the beam web against collapse of the beam web under lateral load.

3,704,561

FIBER REINFORCED RESIN GRATING

Leonard S. Meyer, Columbia, S.C., assignor to Sybron Corporation, Rochester, N.Y.

Filed Jan. 27, 1971, Ser. No. 110,076
Int. Cl. E04f *15/10*
U.S. Cl. 52—180 **9 Claims**

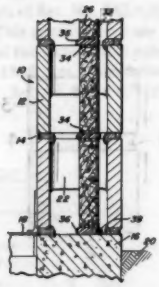
A grating comprising preformed fiber reinforced resin strips stacked in the positions of the intersecting bars of the grating and with the strips interleaving at the points of intersection, the reinforcement strips being embedded in a resin matrix. The method for making the grating comprises forming the fiber reinforced strips with the fibers under tension, and assembling such preformed strips in a mold having a network of intersecting cavities for defining the grating bars, the cavities being initially charged with liquid hardenable resin material, so that the reinforcement strips are submerged in the liquid resin during assembly, the embedment resin being subsequently hardened.

3,704,562

PREFORMED ENCLOSED INSULATING FILLER AND INSULATING STRIP

Paul R. Grants, Roselle Park, N.J., assignor to I. F. S. Incorporation

Filed Oct. 5, 1970, Ser. No. 78,095
Int. Cl. E04b *1/62*
U.S. Cl. 52—396 **1 Claim**



An insulating filler or insert for hollow building blocks which is preformed and enclosed with a covering material together with an insulating strip engaged with a portion of the periphery of the filler to provide a continuous insulating wall within a hollow wall formed by hollow building blocks.

3,704,563

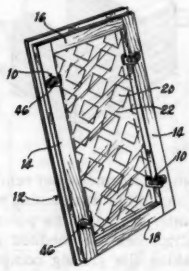
RETAINING CLIP ASSEMBLY

Arthur Waller, Highland Park, Ill., assignor to Bull Dog Lock Company, Chicago, Ill.

Filed Jan. 11, 1971, Ser. No. 105,269
Int. Cl. E06b *3/58*; F16b *21/20*
U.S. Cl. 52—455 **9 Claims**

A means for releasibly attaching an article such as a decorative panel to a supporting surface such as a cabinet door. The

means comprises a generally V-shaped clip having one end for engaging the article and the other end engaging the body on which the article is to be retained. The clip comprises one end defining an elongated opening, and a stud having an enlarged head is adapted to be received in an enlarged portion of the elongated opening with the shank of the stud then being retained by sliding this clip portion relative to the stud whereby a narrower portion of the elongated opening is positioned around the stud. The same end of the clip defines a ledge engaging portion which engages a ledge positioned adjacent the stud whereby the clip will be retained in position when the shank is received by the elongated opening and when the ledge engaging means engages the surrounding ledge. The clip is located in place by sliding the end defining the opening relative to the associated stud. Reverse sliding action is required for removing the clip.

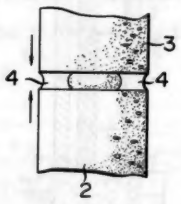


3,704,564

METHOD OF FABRICATING STRUCTURAL BLOCK ASSEMBLIES

Motoyuki Koga, Tokyo, Japan, assignor to Hakko Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1969, Ser. No. 888,262
Int. Cl. B04g *21/14*
U.S. Cl. 52—747 **2 Claims**



Structural blocks are bonded together by interposing between them an elastic foamed body impregnated with a flowable binder, applying a pressure to the foamed body to squeeze out the impregnated binder in the gap between blocks and then causing the binder to set.

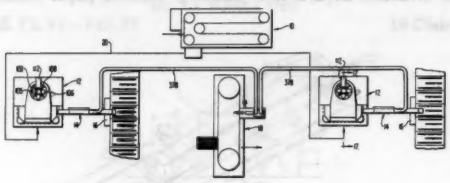
3,704,565

METHOD OF AND APPARATUS FOR PRODUCING HOSIERY

John W. Glaze, Jr., Charlotte, N.C., assignor to Intech Corporation

Filed Aug. 24, 1970, Ser. No. 66,338
Int. Cl. B65b *63/04, 63/02*
U.S. Cl. 53—21 FW **37 Claims**

A method of an apparatus for shaping and inspecting hosiery articles on a form, automatically stripping the articles from the form, and conveying the stripped articles selectively to either a stacking apparatus where successive articles are automatically stacked in superimposed flat relation or to a packaging apparatus where the successive articles are automatically packaged. Individual components of the apparatus may be employed separately to perform individual functions, or collectively in an overall system.

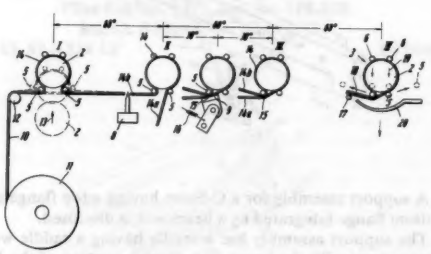


3,704,566

METHOD AND APPARATUS FOR PACKING VERTICALLY STACKED COINS, STAMPS AND OTHER STACKED ARTICLES IN A SHRINKING FILM

Gert Zimmermann, Berlin, Germany, assignor to Firma F. Zimmermann & Co., Berlin, Germany

Filed May 20, 1971, Ser. No. 145,241
Claims priority, application Germany, June 6, 1970, P 20 28 789.2
Int. Cl. B65b *11/02*
U.S. Cl. 53—30 **19 Claims**



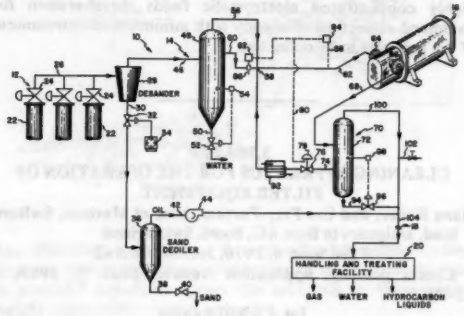
The film is fed from the roll longitudinally in a direction transverse to the stack length, and the stack is pushed into the film to form a relatively large film loop corresponding to the lateral peripheral dimension of the stack, with the stack being clamped in the film loop with the free loop ends overlapped in superposition with each other and extending substantially tangentially of the loop. The free ends are formed by severing the loop from the continuous length of film after wrapping of the stack in the film. The free ends may be sealed to each other. The wrapped stack is then turned into a substantially horizontal orientation with the free loop ends down, and the film loop is shrunk around the stack while maintaining such substantially horizontal orientation of the wrapped stack. The wrapped stack is fed to a heating furnace, for shrinking of the film, by a conveyor which is inclined laterally of its direction of movement, and pivoted angle levers are provided to push against the lower ends of the stacks to align the articles in the stack in superposition with each other.

3,704,567

WELL PRODUCTION METHOD AND APPARATUS

Robert F. Engel, New Orleans, La., assignor to Shell Oil Company, New York, N.Y.

Filed Dec. 9, 1970, Ser. No. 96,500
Int. Cl. B01d 19/00
U.S. Cl. 55—43 12 Claims



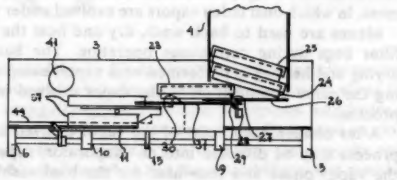
A multiphase hydrocarbon mixture is produced from each of a plurality of wells. The multiphase mixture is pressurized by a single machine without separating the gas and liquid components. The multiphase mixture is then transported through a conduit to a treating facility where the gas and liquid components are separated for ultimate sale or use.

3,704,568

APPARATUS FOR THE FILLING OF PETRI DISHES

Ornolf Duhring, Bronshoi, and Lavritz Gudmund Damgaard, Virum, both of Denmark, assignors to H. Struers Chemiske Laboratorium, Copenhagen, Denmark

Filed June 23, 1971, Ser. No. 155,708
Int. Cl. B65b 31/02
U.S. Cl. 53—109 9 Claims



An apparatus for filling Petri dishes with cover comprises an alongated sterile chamber in which a dish and lid are fed forward in rectilinear paths in different levels from a stack of closed dishes in a hopper at one end of the sterile chamber, the dish being caused to drop down on the bottom of the chamber between slide rails that catch the edge of the lid. In one position of the travelling path the dish is filled with substrate, and in a subsequent position the lid is caused to drop down on the dish. Preferably the distance between the slide rails is adjustable.

ERRATUM

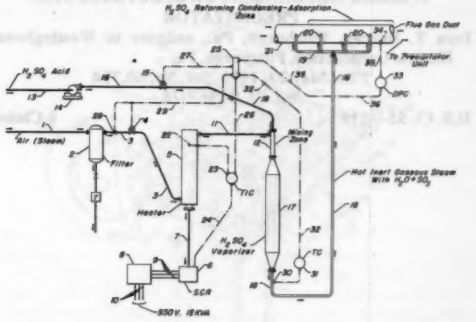
For Class 55—43 see:
Patent No. 3,704,567

3,704,569

SYSTEM FOR CONDITIONING FLUE GAS WITH H2SO4

Leslie C. Hardison, and Salvatore A. Guerrieri, both of Norwalk, Conn., assignors to Universal Oil Products Company, Des Plains, Ill.

Filed April 2, 1970, Ser. No. 25,044
Int. Cl. B03c 3/01
U.S. Cl. 55—4 6 Claims



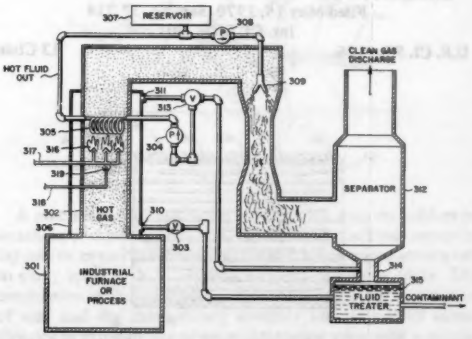
In order to preclude resistance of entrained fine particles to collection within electrical precipitator means, there is a conditioning of the particles carried in the flue gas stream by having vaporized and decomposed H_2SO_4 condensed and adsorbed on the particles themselves. Sulfuric acid is mixed and vaporized with a hot gaseous stream at a temperature above 400° F. and then the resulting hot stream with decomposed H_2SO_4 is introduced uniformly into the flue gas stream at a zone ahead of the precipitator unit so that the acid can reform and condense on the particles.

3,704,570

PROCESS AND APPARATUS FOR CLEANING AND PUMPING CONTAMINATED INDUSTRIAL GASES

Hugh E. Gardenier, Tullahoma, Tenn., assignor to Aronetics, Inc., Tullahoma, Tenn.

Continuation-in-part of Ser. No. 842,635, July 17, 1969, Pat. No. 3,613,333. This application June 16, 1970, Ser. No. 46,793The portion of the term of this patent subsequent to Oct. 19, 1988, has been disclaimed.
Int. Cl. B01d 47/10
U.S. Cl. 55—84 18 Claims



Process and apparatus for removing contaminants from and pumping a gas stream comprising indirectly heat exchanging the gas and a liquid, introducing the liquid under conditions of elevated temperature and pressure in vaporized and atomized form into the gas, mixing same thereby entrapping the contaminants, and separating clean gas from the atomized liquid

containing the contaminants. In one embodiment, a water jacket surrounds the hot gas conduit and serves both to cool the hot gases and to pre-heat the cleansing liquid. Also disclosed is an auxiliary mechanism for heating the cleansing liquid before injection into the gas stream. The combustibles in the contaminated gases may be used for such heating.

3,704,571

WASHER MECHANISM FOR ELECTROSTATIC PRECIPITATOR

Ivan T. Burney, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 27, 1970, Ser. No. 40,794
Int. Cl. B03c *3/78*
U.S. Cl. 55—118 **6 Claims**

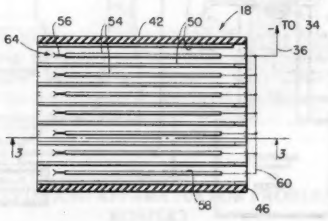
An upright panel of at least one precipitator cell with a plurality of substantially vertical disposed plates is provided with a washer header assembly supported for traversing movement in front of the panel and a rotatable sprocket is journalled on said header assembly with its teeth engaging a sprocket chain supported in front of the panel along the path of the traversing movement of the header assembly so that the header assembly will traverse the panel as the sprocket is rotated.

3,704,572

ELECTROSTATIC PRECIPITATOR SYSTEM

Meredith C. Gourdine, West Orange, and Howard A. Sayers, Clifton, both of N.J., assignors to Gourdine Systems, Inc., Livingston, N.J.

Filed May 15, 1970, Ser. No. 37,714
Int. Cl. B03c *3/01*
U.S. Cl. 55—126 **12 Claims**



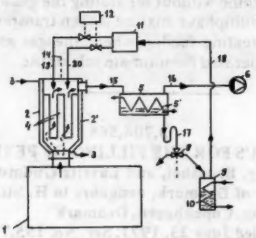
An improved electrostatic precipitator device capable of significant size reduction having flat parallel plates consisting of an ionizing corona discharge portion as a unitary structure which is utilized to effectuate precipitation of entrained particles from an air stream onto the surface of a plurality of associated collection members, as an air stream containing entrained particles is cleaned in passing through the precipitator device. The ionizer discharge portion of the unitary structure comprises a plurality of substantially uniformly spaced apart sharp electrical conductive protrusions directed to alternate sides of the unitary structure; thereby forming a uniform ionization region with a parallel portion of the collector extending the full length of the ionizer. The remainder of each of the unitary structure functions as a passive electrode which cooperates with the remaining portion of the collector to form highly concentrated electrostatic fields therebetween for enhanced collection efficiency with minimum re-entrainment of the particles to be collected.

3,704,573

CLEANING APPARATUS FOR THE OPERATION OF FILTER EQUIPMENT

Hans Koller, and Urs Frey-Portner, both of Muttenz, Switzerland, assignors to Buss AG, Basel, Switzerland

Filed Sept. 8, 1970, Ser. No. 70,162
Claims priority, application Austria, Sept. 9, 1969, A 8540/69
Int. Cl. B01d *46/04*
U.S. Cl. 55—268 **1 Claim**



A filter equipment containing a number of filter units of conventional design, connected directly to process equipment, in which dust laden vapors are evolved under vacuum.

Means are used to back wash, dry and heat the individual filter bags during continuous operation. The backwashing, drying and heating is performed with superheated vapor having the same composition as the vapor evolved in the main process.

After condensation, part of the vapor evolved in the main process may be diverted into an evaporator, superheated in the vapor phase and then used for the backwashing, drying and heating. If lines are too long resulting in vapor near the dew point, the effect of double expansion with partial condensation may be used to bring back the vapor to the superheated phase before backwashing a filter bag.

3,704,574

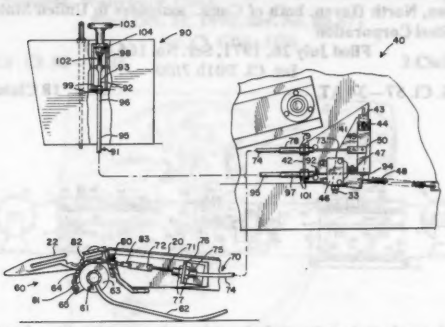
COMBINE AUTOMATIC HEADER HEIGHT CONTROL

Frank H. Gardner, Colona, Ill., assignor to Internatioanl Harvester Company, Chicago, Ill.

Filed Oct. 4, 1971, Ser. No. 186,133
Int. Cl. A01d *45/18*
U.S. Cl. 56—10.2 **6 Claims**

An automatic header control for a harvester platform that conveys the sensed ground contour to the valve without

distortion and can be adjusted for various heights without introducing distortions. A bar that is oscillated by the ground sensing fingers has a chain that warps and unwraps around the



bar. The chain is connected through a flexible cable to a control arm that engages the control valve stem. The control valve is pivotally adjustable about the arm axis to thus provide height adjustment without distortion.

3,704,575

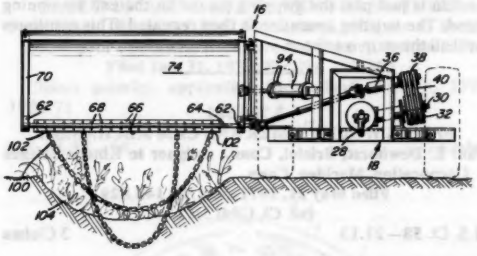
FLAIL-TYPE IRRIGATION DITCH CLEANER

Martin L. Daniel, 2409 Hanson Drive, Missoula, Mont., and George E. Sacks, Carvallis, Mont.

Filed Jan. 26, 1971, Ser. No. 109,828

Int. Cl. A01d *49/00*

U.S. Cl. 56—12.7 **8 Claims**



An elongated frame for horizontal positioning transversely of and above a ditch to be cleaned and movement along the ditch. An elongated support member is disposed lengthwise of and journalled from a lower portion of the frame and an elongated flexible flail member is provided with the opposite ends of the flexible flail member and the rotatable support member including coacting structure for removably anchoring the opposite ends of the flail member to selected longitudinally spaced portions of the elongated support member, whereby a flail of generally U-shaped configuration may be swung rapidly about the axis of rotation of the elongated support member from which the flail is supported.

3,704,576

FRUIT AND VEGETABLE HARVESTING DEVICE

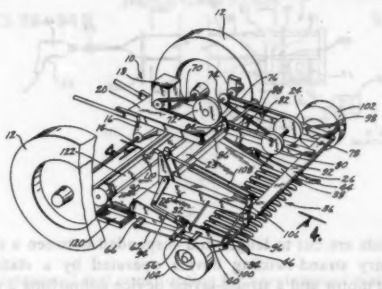
Graeme R. Quick, Ames, Iowa, assignor to Iowa State University Research Foundation, Ames, Iowa

Continuation-in-part of Ser. No. 753,553, Aug. 19, 1968, Pat. No. 3,596,456. This application June 9, 1971, Ser. No. 151,472

Int. Cl. A01g *19/00*

U.S. Cl. 56—330 **3 Claims**

A device for harvesting fruit or vegetables including a pickup unit and vibration means for imparting arcuate vibratory motion to the pickup unit for gathering, stripping and conveying the fruit or vegetables to a collecting unit. A sickle bar is positioned below the upper ends of spaced apart teeth provided on the pickup unit for cutting the stems of the plants as the plants move rearwardly through the spaced apart teeth. Cutting action is imparted to the sickle bar by a linkage con-



necting the oscillating pickup unit, the sickle bar and the frame of the device. An air elevator is provided rearwardly of the spaced apart teeth and sickle bar so that the stems and leafy material which have been separated from the plants can be blow upwardly and rearwardly from the fruit or vegetables as the fruit or vegetables are being conveyed rearwardly to the collection unit.

3,704,577

MECHANISM FOR REGULATING TOOL-CARRIER ARMS ON SPINNER-TYPE AGRICULTURAL MACHINES

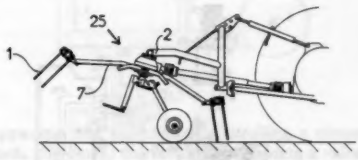
Walter Reber, Saverne, France, assignor to Societe Dite: Societe Kuhn Frerest Cie. Societe En Commandite Simple, Saverne, France

Filed Feb. 27, 1970, Ser. No. 14,949

Claims priority, application France, March 26, 1968, 6908370; Jan. 26, 1970, 7002568

Int. Cl. A01d *79/00*

U.S. Cl. 56—370 **4 Claims**

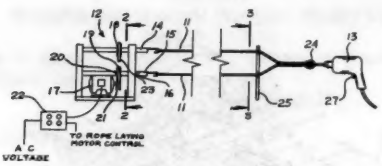


A mechanism for regulating tool-carrier arms on tedders or swathers or other spinner-type agricultural machines comprising one or more rotary members which act as tool-carrier arms to carry tools such as rotating forks or prongs or teeth. The mechanism is characterized in that some or all of the said arms of one and the same rotary member are connected either directly or through one or more interposed parts with a regulable element rotating with the rotary member during working, the whole being arranged in such manner that to a rotational displacement of this element in relation to the arm-carrier hub there corresponds a rotational displacement upon themselves, in relation to their seatings on the arm-carrier hub, of these some or preferably all of the tool-carrier arms of one and the same rotary member.

3,704,578
METHOD FOR MAKING LENGTHS OF ROPE

John A. Myers, Cordova, Ill.

Filed July 15, 1971, Ser. No. 162,874
Int. Cl. D07b 3/00
U.S. Cl. 57—1 R 4 Claims

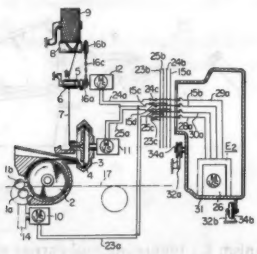


Strands are cut to length and suspended between a simple stationary strand-twisting device operated by a stationary electric motor and a strand-laying device comprising a portable motor that may be a usual electric drill or a motor mounted on a track. A paddle-like strand spacer is inserted between the strands near the drill, and after the strands are twisted sufficiently by operation of the stationary motor alone, both the stationary motor and drill are operated simultaneously to lay the strands together at the same speed at which they are being twisted while the strand spacer is moved from the drill toward the strand-twisting device.

3,704,579
PRACTICAL METHOD AND APPARATUS FOR DRIVING AN OPEN-END SPINNING FRAME

Takuzo Tooka, Aichi-gun; Choji Nozaki, and Kiichi Kono, both of Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi-ken and Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya-shi, Japan

Filed April 16, 1971, Ser. No. 134,726
Claims priority, application Japan, April 18, 1970, 45/33166
Int. Cl. D01h 1/12
U.S. Cl. 57—34 R 13 Claims

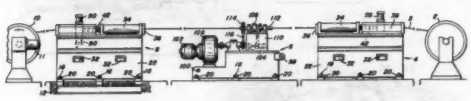


Method and apparatus capable of controlling the driving speed of the open-end spinning frame utilizing a plurality of spinning units by applying at least two variable frequency electric sources. A first electric source is used for driving all spinning units for carrying out the normal spinning operation, while a second electric source is used for driving a spinning unit of yarn breakages used for carrying out the yarn piecing operation. The latter source is mounted on a carriage capable of being displaced along the spinning frame and can be stopped at a desired working position correctly.

3,704,580
METHOD AND APPARATUS FOR MAKING TWISTED STONESAWING STRANDS AND THE LIKE

Raymond J. Blanchet, North Branford, and William G. Stanton, North Haven, both of Conn., assignors to United States Steel Corporation

Filed July 26, 1971, Ser. No. 166,047
Int. Cl. D01h 7/00
U.S. Cl. 57—34 AT 18 Claims

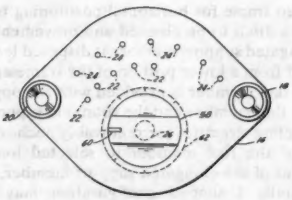


A single strip is twisted about its axis or a plurality of strips are twisted together with the direction of twist in each case being reversed at spaced intervals such as 25 feet, 50 feet or 100 feet. An entry tensioning stand, a twister head stand and an exit tensioning stand are arranged in tandem with strip gripping means being provided on each stand. The gripping means on each tensioning stand is mounted on a longitudinally movable slide which is attached to a pair of pneumatic cylinders for urging the slide away from the twister head stand under a predetermined pressure when the strip is gripped with equal lengths on each side of the twister head. The length on one side will be twisted opposite hand to the length on the other side as the twister head rotates with a predetermined tension being applied to the strip as it is twisted regardless of change of length during the twisting operation. The strip is then released and the strip fed longitudinally until the twisted portion is just past the gripping means on the exit tensioning stand. The twisting operation is then repeated. This continues until all the strip is twisted.

3,704,581
SPRING WOUND TIMER AND CAM MECHANISM

Paul E. Dewhurst, Bristol, Conn., assignor to Kinetic Science Corporation, Meriden, Conn.

Filed May 21, 1971, Ser. No. 145,829
Int. Cl. G04f 3/02
U.S. Cl. 58—21.13 3 Claims

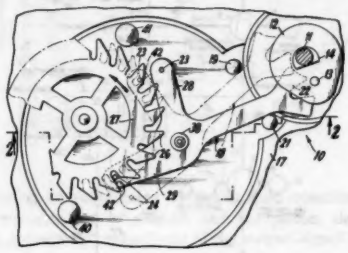


A spring wound timer apparatus is provided including a main spring and a mainshaft with two support plates for positioning a gear train mounted on shafts journaled in the plates, the spacing of the shafts being substantially equidistant from adjacent shafts along a curvilinear line on the plate. In addition, a cam assembly and stop mechanism operates in conjunction with the timer to cooperate with a control means such as a mechanical or electrical switch. The cam assembly includes a pair of cam members with the stop adapted to engage the periphery of the cams permitting gradual start-up of the timing cycle and a quick shut-off of the cycle.

3,704,582
INDEXING MECHANISM FOR HOROLOGICAL INSTRUMENT

Paul Wuthrich, Watertown, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Oct. 15, 1970, Ser. No. 80,871
Int. Cl. G04c 3/04
U.S. Cl. 58—28 D 2 Claims

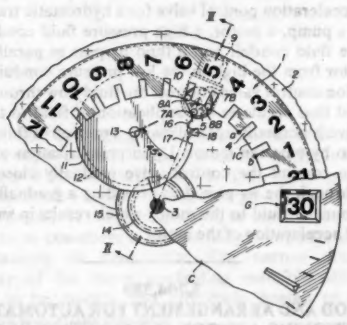


A horological instrument such as a watch includes an indexing mechanism or dial train drive for transmitting power from an oscillating balance wheel to an index wheel. The index wheel drives the gear train of a watch. The balance wheel oscillates a lever between two end positions and one or more pins mounted on the lever alternately engage the teeth of the index wheel stepping the index wheel in the desired direction. The index wheel is held in a rest position at the end of each step by indexing magnets which are arranged to exert a predetermined torque on the wheel and to hold the lever in its banking or end positions.

3,704,583
DATE INDICATING MECHANISM FOR WATCHES

Peter Dome, Brugg bei Biel, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere SA, Geneve, Switzerland

Filed Jan. 31, 1972, Ser. No. 222,260
Claims priority, application Switzerland, Feb. 5, 1971, 1722/71
Int. Cl. G04b 19/24
U.S. Cl. 58—58 2 Claims

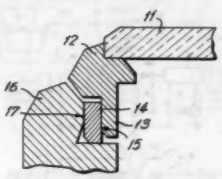


A date indicating mechanism for watches, of the type having a rotatable ring carrying date numbers on one side, equidistantly spaced over the circumference thereof, and means for periodically moving the ring past an inspection window for the date numbers, the improvement comprising drive means for the ring carrying the date numbers, said drive means consisting of a rotatable disk carrying pins meshing with slits provided on one edge of the date number ring and with engagement means on the periphery of a substantially circular cam driven by the gear train of the watch.

3,704,584
WATERPROOF WATCH WITH IMPROVED SEAL CONSTRUCTION

Yoshiaki Fujimori, Suwa, Japan, assignor to Kabushiki Kaisha, Suwa Seikasha, Tokyo, Japan

Filed April 22, 1971, Ser. No. 136,428
Claims priority, application Japan, April 24, 1970, 45/34750; April 24, 1970, 45/34751; April 24, 1970, 45/34752
Int. Cl. G04b 37/08
U.S. Cl. 58—90 R 9 Claims

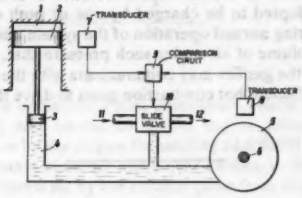


An improved seal construction for a waterproof watch consists of a glass annulus having a tubular portion thin enough to exhibit some flexibility, a flexible seal ring and a case body. The seal ring makes interference fit with both the tubular portion of the glass annulus and the case body.

3,704,585
PROCESS FOR CONTROLLING AND REGULATING PISTON-DRIVEN ENGINES WITH HYDROSTATIC MOTION TRANSDUCERS

Wolfgang Rabiger, Buckenhofen, Germany, assignor to Grundig E.M.V., Furth/Bay, Germany

Filed Dec. 14, 1970, Ser. No. 97,787
Claims priority, application Germany, Dec. 23, 1969, P 19 64 454.3
Int. Cl. F01b 9/00
U.S. Cl. 60—1 15 Claims



An apparatus and method for controlling a piston engine hydrostatic movement convertor by activating a valve for applying fluid to and for withdrawing fluid from the convertor. The valve is controlled by a correspondence error signal and a dead point error signal. The former signal is derived from a comparison of the position of the piston and the angle of rotation of a driving shaft and represents divergence of the piston and shaft from their required relative positions. The dead point error signal is derived from measuring any discrepancy between a nominal dead point and the actual dead point attained by the piston. At any instant, one of the error signals controls the fluid valve as determined by the engine speed. When the engine speed is below a predetermined rate the correspondence signal regulates, and when the speed is faster the dead point error signal controls. Preferably, the transfer of control from the correspondence error signal to the dead point error signal occurs at a higher speed than that at which transfer is made from the dead point error signal to the correspondence error signal.

3,704,586
STARTING SYSTEM FOR A GAS-TURBINE INSTALLATION

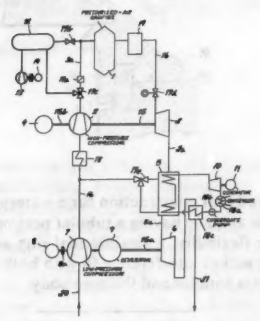
Paul-Heinz Bruns, Mulheim, Germany, assignor to Steinkohlen-Elektrizitat Aktiengesellschaft, Essen, Germany

Filed Jan. 25, 1971, Ser. No. 109,358

Claims priority, application Germany, Feb. 7, 1970, P 20 05 722.1

Int. Cl. F02c *1/04, 5/08, 5/12*

U.S. Cl. 60—39.18 B **7 Claims**



A gas-turbine installation having a pressurized-air hot-gas generator in which a fuel is reacted with the pressurized air, has a high-pressure turbine-driven compressor and a low-pressure turbine-driven compressor in tandem to supply the compressed air for the gasifier, the turbines being operated by the expanding combustible gases from the gasifier. One or both of the turbines may be provided with electrical generators and/or with starting motors and a steam-generating cycle may be provided for operation by the heat of the combustible gases. The starting system of the invention includes a compressed-air reservoir adapted to be charged by one or both of the compressors during normal operation of the system and capable of stirring a volume of air under such pressure that, for starting the system, the gasifier may communicate with the reservoir to generate sufficient hot combustion gases to drive the turbine.

3,704,587
CONTROL SYSTEM FOR A GAS-TURBINE INSTALLATION

Karl Heinz Krieb, Essen, and Fritz Zimmermann, Essen-Steele, both of Germany, assignors to Steinkohlen-Elektrizitats Aktiengesellschaft, Aktiengesellschaft, Essen, Germany

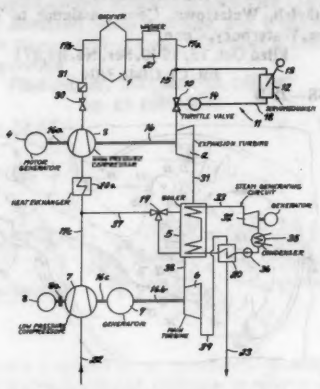
Filed Jan. 25, 1971, Ser. No. 109,359

Claims priority, application Germany, Feb. 7, 1970, P 20 05 723.2

Int. Cl. F02b *43/08*

U.S. Cl. 60—39.03 **5 Claims**

A gas-turbine electricity-generating installation has a pressurized-air fuel (coal) gasifier for producing a high-pressure combustible gas which drives a high-pressure turbocompressor, the low-pressure combustible gases emerging from this turbocompressor being delivered to a boiler for driving a steam-generating circuit. The turbogenerator supplies compressed air to the gasifier and is, in turn, fed with low-pressure compressed air from a low-pressure turbocompressor driven by the exhaust gases emerging from the boiler. The control system comprises a regulating valve between the gasifier and the gas-inlet to the turbine of the high-pressure turbocompressor which is responsive to the output pressure at the gasifier to maintain the same substantially constant.



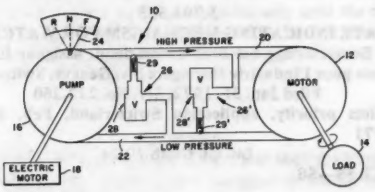
3,704,588
ACCELERATION CONTROL VALVE

Gerald W. Trabbic, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed April 1, 1971, Ser. No. 130,361

Int. Cl. F16d *31/00*

U.S. Cl. 60—53 R **9 Claims**



An acceleration control valve for a hydrostatic transmission having a pump, a motor, a high pressure fluid conduit, a low pressure fluid conduit and a fluid by-pass in parallel around the motor from the high to the low pressure conduit. The acceleration control valve controls the fluid flow through the by-pass and thus regulates the application of fluid to the motor. The valve is normally open allowing a portion of fluid from the pump to by-pass the motor. Upon pressurization of the high pressure conduit the control valve gradually closes as fluid flows through the by-pass thus providing a gradually increasing amount of fluid to the motor which results in smooth and gradual acceleration of the motor.

3,704,589
METHOD AND ARRANGEMENT FOR AUTOMATICALLY POSITIONING A PISTON AS A FUNCTION OF ROTOR POSITION IN A PISTON MOTOR

Hans Kubach, and Gerfried Leberl, both of Fuerth/Bayern, Germany, assignors to Grundig E. M. V. Elektro-Mechanische Versuchsanstalt Inh. Max Grundig, Fuerth/Bayern, Germany

Filed March 20, 1970, Ser. No. 21,418

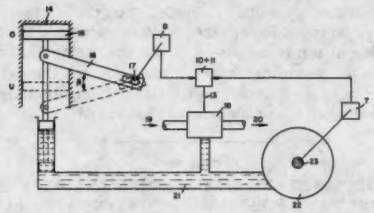
Claims priority, application Germany, March 22, 1969, P 19 14 669.1

Int. Cl. F16b *7/00*

U.S. Cl. 60—545 R **6 Claims**

Instrument transformers furnish a sinusoidal signal corresponding to the angle of rotation of the crankshaft and a

substantially linear signal corresponding to piston position. The difference between the two signals is applied to a phase sensitive detector, whose output activates inlet and outlet



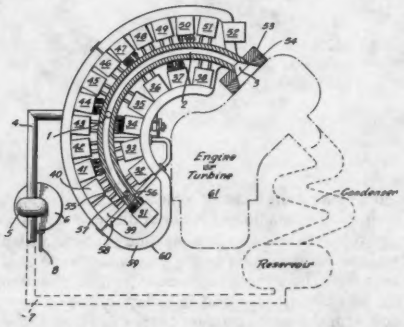
valves adding or subtracting hydraulic fluid constituting the linkage between the crankshaft and the piston, depending upon the polarity and magnitude of the output signal from the detector.

3,704,590

VAPOR GENERATING MANIFOLD AND CONTROL SYSTEM

John O. Van Derbeck, P.O. Box 644, Huntington Beach, Calif.

Filed Nov. 17, 1969, Ser. No. 877,202
Int. Cl. F01k *11/00, 11/02*
U.S. Cl. 60—108 **1 Claim**



A novel vapor generating manifold is employed in combination with a vapor engine. Exhaust from the engine is recycled in a closed Rankine cycle system. The vapor generating manifold includes a narrow arc-shaped passageway with burners on both sides of the passageway. The entire structure is so designed as to constitute a substantially composite structure thus enhancing its desirability. The narrow arc-shaped passageway of the vapor generating manifold allows the manifold to be quickly and efficiently heated to thereby facilitate its vaporizing function.

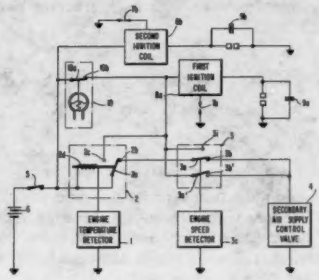
3,704,591

SYSTEM FOR PURIFYING EXHAUST GAS OF AN INTERNAL COMBUSTION

Yasuo Tatsutomi, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima-ken, Japan

Filed Jan. 14, 1971, Ser. No. 106,423
Claims priority, application Japan, Jan. 14, 1970, 45/4015; April 25, 1970, 45/35553
Int. Cl. F02b *75/10*
U.S. Cl. 60—290 **14 Claims**

A system for purifying an exhaust gas of an internal combustion engine where secondary air is supplied to the exhaust gas system for reburning the exhaust gas includes a first switch switching at a predetermined engine temperature, a second switch switching upon detecting engine speed, for switching



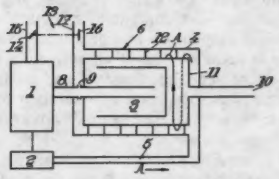
ON and OFF, the operation of said secondary air supplying means at both high and low speed set values in response to the switching of said first switch.

3,704,592

POST-COMBUSTION DEVICES FOR INTERNAL COMBUSTION ENGINES

Jean Panhard, Paris, France, assignor to Societe de Construction Mecaniques Panhard & Levassor, Paris, France

Filed July 16, 1970, Ser. No. 55,408
Claims priority, application France, July 17, 1969, 6924407
Int. Cl. F02b *75/10*; F01n *3/10*
U.S. Cl. 60—290 **10 Claims**



The device comprises a post-combustion chamber bounded by a casing and connected to the engine exhaust pipe, a blower driven by the engine for sending additional air into the post-combustion chamber and a heat-exchanger for pre-heating the additional air by the exhaust gases from the post-combustion chamber. The pos-combustion chamber and the heat-exchanger are constituted by three co-axial cylinders, the assembly being arranged so that the exhaust gases are introduced into the axis and at the center of the post-combustion chamber, the outer cylinder and the intermediate cylinder defining a peripheral zone in which the additional air circulates. The intermediate cylinder and the inner cylinder define an intermediate zone in which the exhaust gases from the combustion chamber circulate in countercurrent to the additional air. The device is useful for two-stroke, four-stroke and rotary piston engines.

3,704,593

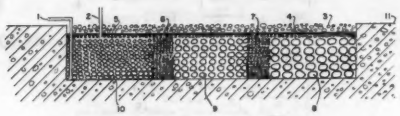
CONSTRUCTING BROKEN ROCK SUPPORTS FOR ROOFS OF CAVITIES STORING LIQUIFIED HYDROCARBON GASES

John C. St. Clair, Box 216, R.R. 5, London, Ohio

Filed June 16, 1970, Ser. No. 46,829
Int. Cl. B65g *5/00*
U.S. Cl. 61—.5 **8 Claims**

Liquified natural gas, ethane or propane is stored in a cavity in which the roof is supported on broken rock placed in the

lake. Very cheap broken rock containing a large volume of voids,when piled,is provided by building the cavity on a rock formation, breaking the rock formation into small pieces by rippers or giant teeth pulled by giant tractors, sieving the broken rock into fractions with each fraction having rock



pieces with a minimum to maximum size ratio of 0.5, and piling the rock fractions without substantial mixing in the cavity. This allows storage cavities to be built at a fraction of the former cost and that also can not be damaged by sabotage and riots like former storage can be.

3,704,594

METHOD OF SUBSIDENCE AND ACID ENTRAINED DRAINAGE CONTROL AND ADMIXTURES THEREFOR

William A. Davis, Kittanning, Pa., assignor to Michael L. Vongrey, Jr., Kittanning, Pa.

Filed Aug. 19, 1969, Ser. No. 851,457

Int. Cl. E02d *3/12*

U.S. Cl. 61—36 **8 Claims**

The back filling of natural and artificial subterranean voids for purposes of surface subsidence control and acid entrained water drainage control coming from such voids with a fluid formed admixture of a cementitious nature which solidifies upon setting in the void, the rate of solidification controlled by the amount of hydraulic cement or silicic acid added to the admixture. In the situation where the grout is employed also for control of acid entrained water drainage, ingredients are added to reduce the acid content to a by-product which is placed in colloidal suspension in a gelatinous material in the admixture due to fermentation of an activating agent with a fermenting agent of vegetable material and eliminate further formation of acid from subterranean potentially formable acid bearing strata to thereby re-establish the water table as well as providing safe palatable water.

Admixtures containing natural elements are provided which form a hydrating supporting mass. When the mass solidifies, it possesses a high strength porous nature.

In the case of admixtures possessing a fermentation action, there is a leavening action causing the mass when placed in a subterranean void, to bloat and be expansive in nature to completely fill the area of the void.

3,704,595

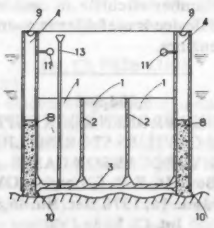
CAISSON FOR SEAWORKS CONSTRUCTION AND TO A METHOD OF USING THE CAISSON

Pierre Launay, Versailles, France, assignor to Compagnie Industrielle de Travaux, Paris, France

Filed July 20, 1970, Ser. No. 56,453

Int. Cl. E02d *23/00*; E01d *19/02*

U.S. Cl. 61—50 **4 Claims**



A caisson for use in constructing seaworks which comprises a plurality of compartments for receiving ballast and a plurality of enclosures each of which is sealed at the top and bottom by hermetic closures and including between the seals a retractable floor, means such as a compressor being provided to pressurize each enclosure to extend the lower seal, which is flexible, and ducting being provided to inject a binder into granular material, initially loaded on the floors, when discharged on to the lower seals, upon retraction of the floors, the caisson in use being towed to the site, being ballasted to sink it on to the bottom where it rests through the extended lower seals and the granular material then being discharged on to the lower seals where a binder is added to it.

3,704,596

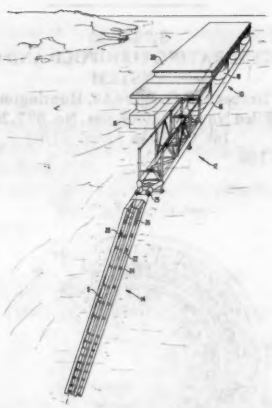
COLUMN STABILIZED STINGER TRANSITION SEGMENT AND PIPELINE SUPPORTING APPARATUS

Samuel H. Lloyd, Los Angeles, Calif., assignor to Santa Fe International Corporation, Los Angeles, Calif.

Filed March 25, 1970, Ser. No. 22,634

Int. Cl. B63b *35/04*; F16l *1/00*

U.S. Cl. 61—72.3 **31 Claims**



The stinger segment includes a base structure having a plurality of upstanding stabilizing columns on opposite sides of its pitch and roll axes and carrying pipeline supports which permit translational movement of the pipeline relative to the stinger segment. The stinger segment is pivotably secured behind the pipelaying barge and is ballasted from a low draft condition with the base structure having freeboard to a high draft condition whith the mean waterline located at about one half the effective height of the stabilizing columns when in the pipeline supporting position. The pipeline supports progressively decrease in height above the base structure from the end of the segment nearest the barge toward the opposite end such that a line extending along the supports defines a radius of curvature at least equal to and preferrably much greater than the minimum allowable radius of curvature for the pipeline. The stinger segment is preferrably configured such that the combined natural frequency of the segment, pipeline, and stinger match the natural frequency of the pipelaying barge. A stinger is secured to the aft end of the stinger transition segment to guide and support pipeline aft of the segment and before disposition on the sea floor.

3,704,597

COOLING APPARATUS

Kenneth Edmund Nicholds, Redditch, England, assignor to Hymatic Engineering Company Limited, Redditch, England

Filed Dec. 7, 1970, Ser. No. 95,723

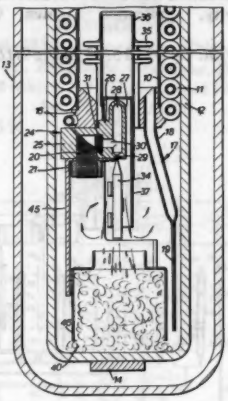
Claims priority, application Great Britain, Dec. 8, 1969, 59741/69

Int. Cl. F25b *19/00*

U.S. Cl. 62—222 **9 Claims**

Cooling apparatus of the Joule Thomson type includes a load situated below and spaced from the nozzle, a body of ab-

sorbent material in heat exchange relationship with the load, and a valve controlling the effective area of the nozzle to vary the flow of refrigerant automatically under the control of a sensor situated in heat exchange relationship with the absorbent material. To achieve the required heat exchange relation-



ship between them the sensor may be in contact with the absorbent material, or separated from it by a metal wall, or even slightly spaced from it, provided that sufficient heat flow can occur from the sensor to the absorbent material to cause the response to depend on the extent to which the absorbent material is saturated with liquid refrigerant.

3,704,598

CRYOGENIC COOLING APPARATUS

David Neil Campbell, Alcester, and Frank Arnold Turton, Cofton, both of England, assignors to The Hymatic Engineering Company, Redditch, England

Filed March 23, 1970, Ser. No. 21,601

Claims priority, application Great Britain, March 25, 1969, 15,606/69; April 15, 1969, 19,181/69

Int. Cl. F25b *19/00*

U.S. Cl. 62—514 **2 Claims**

Cryogenic cooling apparatus includes a generally tubular heat exchanger affording two paths through one of which refrigerant from a supply under pressure is supplied to a pressure reducing nozzle, whereupon the low pressure refrigerant returns through the other path, a valve member co-operating with the nozzle to vary its effective area for automatically controlling the flow of refrigerant, and a bellows, connected to the valve to actuate it. To provide a compact construction without unduly reducing the size of the bellows the valve is situated outside the heat exchanger beyond its cold end and the bellows is outside the heat exchanger beyond its warm end, and is connected to the valve by a piston rod extending through the heat exchanger.

3,704,599

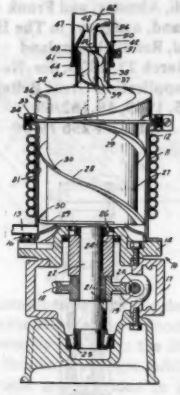
COMPRESSION MEANS FOR FLAKE ICE WATER

James G. Darby, Webb Lake, Wis., and Jack F. Clearman, Stevensville, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Oct. 17, 1969, Ser. No. 13,912

Int. Cl. F25c *1/14*

U.S. Cl. 62—354 **7 Claims**



A method and means of removing liquid from a flake ice product wherein a mass of flake ice product is driven axially in the form of a confined columnar path and at one point in the path the cross-sectional area of the column is temporarily reduced over a discrete axial length to squeeze excess liquid from the product. Such compression can be conveniently effected by a resiliently elastic member having a conical portion necking down to an opening of pre-selected size, the size of the opening and the degree of resilience being selected, and varied if desired, to produce an ice flake product of any required percentage of moisture content.

3,704,600

CRYOGENIC REFRIGERATOR

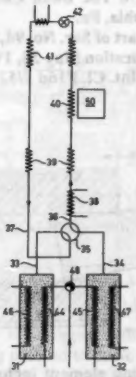
Gijsbert Prast, and Clifford McDonald Hargreaves, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.

Filed Oct. 5, 1970, Ser. No. 77,802

Claims priority, application Netherlands, Oct. 15, 1969, 6915564

Int. Cl. F25d *3/08*

U.S. Cl. 62—457 **11 Claims**



A cryogenic refrigerator including cooling means for H_2 before it is expanded in a throttle valve and flows back to one of two containers which are filled with an alloy of A and B in powder form, in which the ratio A : B can vary from 1 : 3 to 2 : 17, wherein A is Ca or one or more of the rare earths, if

desired combined with Th and/or Zr and/or Hf, and wherein B is mainly Ni and/or Co, this alloy having the property of readily absorbing H_2 at low temperature and readily desorbing H_2 at high temperature, which gas is again directed to said throttle.

3,704,601

CRYOGENIC COOLING APPARATUS

David Neil Campbell, Alcester, and Frank Arnold Turton, Cofton, both of England, assignors to The Hymatic Engineering Company Limited, Redditch, England

Filed March 23, 1970, Ser. No. 21,603

Claims priority, application Great Britain, March 25, 1969, 15,606/69; April 15, 1969, 19,182/69

Int. Cl. F25b *19/00*

U.S. Cl. 62—514 **4 Claims**

Cryogenic cooling apparatus including a heat exchanger affording two paths through one of which refrigerant gas from a supply under pressure is supplied to a pressure reducing nozzle, whereupon the low pressure refrigerant returns through the other path, a valve member controlled by a bellows and co-operating with the nozzle to vary its effective area for automatically controlling the flow of refrigerant. To give "fail open" operation the valve is subject to the vapor pressure of a material which falls below the ambient pressure in the apparatus as its temperature falls and the demand for cooling drops, and arranged so that the resulting suction will then tend to close the valve against the said bias.

3,704,602

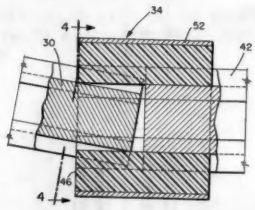
REINFORCED CAST NYLON COUPLING ELEMENT

Stanley C. Einhorn, c/o The Budd Company, 2450 Hunting Park Ave., Philadelphia, Pa.

Continuation-in-part of Ser. No. 94,136, Dec. 1, 1970, abandoned. This application May 28, 1971, Ser. No. 148,002

Int. Cl. F16d *3/52*

U.S. Cl. 64—11 R **7 Claims**



A cast nylon coupling element includes a central opening adapted to receive connecting elements of shafts from a pair of movable bodies to be coupled. The nylon body is press fitted into a metal cylindrical member which provides reinforcement about the circumference of the nylon body. A flexible reinforcement is also included within the nylon body.

3,704,603

CELLULOSE BLEACHING PLANT

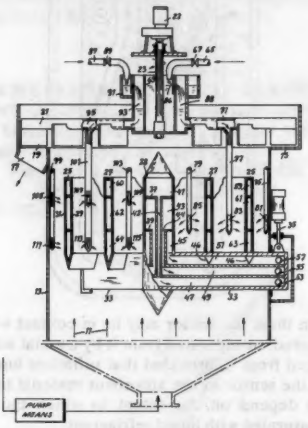
Johan C. F. C. Richter, St. Jean Cap Ferrat, France, assignor to Aktiebolaget Kamyr, Karlstad, Sweden

Continuation of Ser. No. 628,417, April 4, 1967, abandoned. This application Oct. 30, 1970, Ser. No. 85,714

Claims priority, application Sweden, Oct. 27, 1966, 14748/66

Int. Cl. D21d *5/02*; D21c *9/18*

U.S. Cl. 68—18 F **6 Claims**



The present invention concerns a cellulose bleaching plant. A container forming part of said plant is provided for continuous axial flow of the pulp to be bleached and is provided with means for exchanging the liquid contents of the pulp. Said means comprise hollow screen bodies and movable spray tubes. Liquid supplied through said tubes and distributed into the pulp displaces the previous liquid contents of the pulp, such as a bleaching solution, which enters the screen bodies and is then discharged. The cavities of the screen bodies are divided into height zones having separate outlets, whereby the discharged liquid is fractionated. The spray tubes supply different liquids in corresponding height zones of the container. Thus a double exchange of liquids is made possible, and the washing liquid that has replaced the bleaching liquid may in its turn be replaced by another chemical treatment liquid.

3,704,604

AUTOMATIC BOTTOM ROUGHING MACHINE

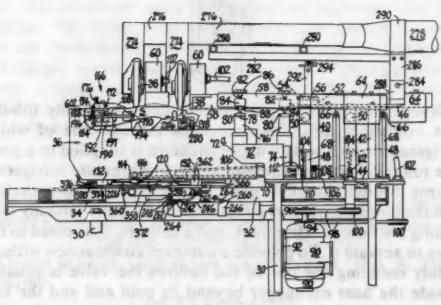
Herbert W. Boot, and Leslie R. Parr, both of Leicester, England, assignors to USM Corporation, Flemington, N.J.

Filed June 17, 1971, Ser. No. 154,029

Claims priority, application Great Britain, June 27, 1970, 31,258/70

Int. Cl. C14b *1/44*

U.S. Cl. 69—6.5 **14 Claims**



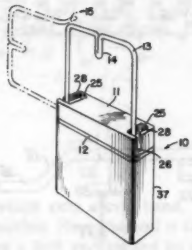
An apparatus for operating on shoe bottoms having a pair of rotatable tools, a shoe support, means for moving the shoe

support in advancing and returning directions relative to the tools, and means for arresting movement of the shoe support in the returning direction to a predetermined extent.

3,704,605
KEY HOLDER

Norbert Leopoldi, 4180 Marine Drive, Chicago, Ill., and Kenneth C. Rolin, Sr., 28 Hillside, Grayslake, Ill.

Filed March 1, 1971, Ser. No. 119,499
Int. Cl. A44b *15/00*
U.S. Cl. 70—456 R **23 Claims**

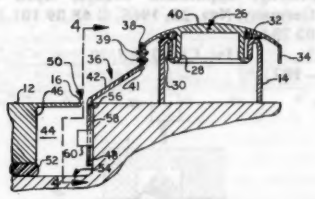


A key holder and utilitarian article having a spring steel member or U-shaped key retaining loop pivotally and releasably mounted at one or opposite ends in a head member with means in the head member to release either end upon actuation by the loop and locking means to secure either end against removal while the other end is released.

3,704,606
FILLER TUBE LOCKING DEVICE

Simon E. Russek, Jr., 17251 Mayerling Street, Los Angeles, Calif.

Filed Nov. 27, 1970, Ser. No. 93,121
Int. Cl. B65d *55/14*
U.S. Cl. 70—164 **11 Claims**

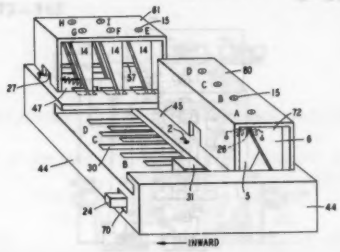


For filler tubes for gasoline tanks and other receptacles located adjacent a motor vehicle door or other lockable closure, removal of a conventional cap, such as a gasoline cap, from the filler tube is prevented by means of a hinged strap. One end of the strap is affixed to the cap while the other end of the strap is adapted to be positioned in the recess between the lip of the door and body frame. When the strap is positioned in the recess and the door is closed, the hinge cannot be removed from the recess and, consequently, the cap cannot be rotated or otherwise removed from the gasoline filler tube. Locking of the door effectively locks the gas cap to the filler tube. One of several lips or latches may be provided on the vehicle frame to engage the strap to further hold the strap in position and to further maintain locking engagement between the cap and the filler tube. Alternately, the hinged strap may be positioned over the cap to perform the same purpose.

3,704,607
PUSHBUTTON COMBINATION LOCK

Charles Elias Germanton, 38 Mountain Ave., Summit, N.J.

Filed June 16, 1971, Ser. No. 153,526
Int. Cl. E05b *13/00, 37/16*
U.S. Cl. 70—220 **12 Claims**

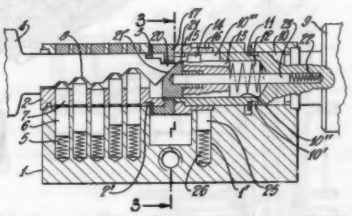


In a pushbutton combination lock the deflection of a "zero-energy" control element at a prescribed time permits the outer door knob assembly to engage the inner knob assembly thereby to unlatch the door. A logic ladder, activator and a ratcheting arrangement are provided in conjunction with a dual scaffold assembly: (1) an opening scaffold to effect deflection of the control element when particular buttons in a set of pushbuttons are depressed and released in a "walking" manner and in a predetermined sequence or opening combination, but which disables the activator to prevent deflection of the control element at the prescribed time when any deviation from the strict sequence of the opening combination occurs, and (2) a reactivating scaffold to re-enable the activator and thus reactivate the lock when other pushbuttons are depressed and released in another predetermined sequence or reactivating combination.

3,704,608
LOCKING ARRANGEMENT FOR DEADBOLT LATCH LOCKS, ESPECIALLY FOR HOTEL GUEST ROOM DOORS

Heinz Kloosterziel, Velbert, Germany, assignor to Eaton Yale & Towne GmbH, Velbeit/Rheinland, Germany

Filed April 29, 1970, Ser. No. 32,930
Claims priority, application Germany, May 7, 1969, P 19 23 172.2
Int. Cl. E05b *35/10*
U.S. Cl. 70—340 **4 Claims**

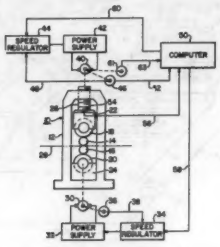


An inside turn knob is equipped with an axially movable coupling member spring pressed to position coupling the knob to a deadbolt operating cam. A guest key inserted into an outside tumbler cylinder will press the coupling member to release position so that the key when rotating a latchbolt operating cam and the turn knob will not rotate the deadbolt cam. A manager's key is relatively short and will not depress the coupling member, and therefore can rotate the deadbolt cam along with the latchbolt cam.

3,704,609
ROLLING MILL GAUGE CONTROL DURING ACCELERATION

John D. Sterret, Jr., Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 25, 1971, Ser. No. 156,907
Int. Cl. B21b 37/12
U.S. Cl. 72—8 7 Claims

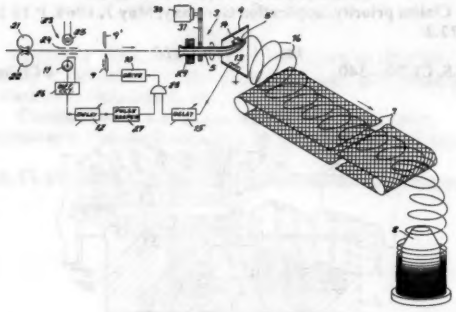


Rolling mill control system for controlling the output gauge of strip material being rolled during acceleration of the mill. This is accomplished by utilizing feed-forward computer techniques to anticipate changes in mill variables and to regulate those variables to maintain constant output gauge during acceleration. Feedback techniques are then used to trim-up the control system, to update the predictive model equations and to dynamically control gauge during acceleration.

3,704,610
WIRE-COIL WINDER

Hans Geipel, Oberhausen-Sterkade; Eckehard Forster, Oberhausen, and Wilfried Heinemann, Dinslaken, all of Germany, assignors to Huttenwerk Oberhausen A.G., Oberhausen, Germany

Filed Aug. 2, 1971, Ser. No. 168,091
Claims priority, application Germany, Aug. 4, 1970, P 20 38 747.7
Int. Cl. B21f 11/00
U.S. Cl. 72—11 8 Claims

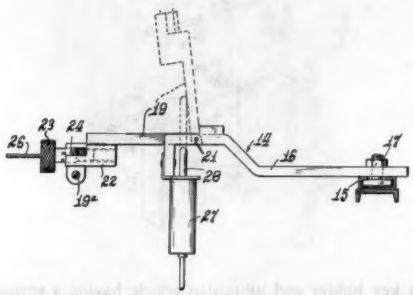


Wire coming hot from a rolling mill is carried to a coil stacker on an apertured conveyor on which it cools after being deposited thereon in a series of overlapping loops by a dispenser including a continuously rotating tubular arm which is centered on a horizontal axis. A cutter ahead of the dispenser, responsive to a delayed trigger pulse from a photocell which monitors the entry of the leading end of the wire into an observation zone, removes the irregularly formed leading portion of any fresh length of wire but is inhibited from operating at instants when the arm is so oriented that the tip of the trimmed wire would reach its exit end in a position in which the wire tip could become entangled in the mesh with a grid-type conveyor or fall between parallel conveyor bands. This inhibition is brought about by a signal generator, such as an inductance co-operating with a magnet carried by the rotating arm, whose output either enables the cutter drive in a predetermined arm position or blocks it during the passage of the arm over certain parts of its orbit.

3,704,611
GAUGING SYSTEM FOR PRESS BRAKES

Roger B. Hirsch, 2034 W. Fulton St., Chicago, Ill.

Filed March 5, 1970, Ser. No. 16,669
Int. Cl. B21d 5/00, 11/22
U.S. Cl. 72—36 25 Claims

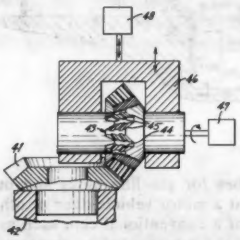


Gauges for press brakes and a control system having a plurality of adjustable gauge arms, each of which is pneumatically controlled for movement into effective and non-effective positions automatically upon selected sequential operation of the press.

3,704,612
TOOTHED TOOL AND DEVICE FOR CHIPLESS GENERATION OF GEARS

Herbert Loos, Munich, Germany, assignor to Carl Hurth Maschinen -und Zahnradfabrik

Continuation-in-part of Ser. Nos. 813,416, April 4, 1969, abandoned, and Ser. No. 876,779, Nov. 14, 1969, abandoned. This application June 8, 1970, Ser. No. 44,473
Claims priority, application France, April 8, 1968, 68147292; Germany, Nov. 28, 1968, G 68 09 101.0; Jan. 28, 1970, G 70 02 784.8
Int. Cl. B21h 5/00
U.S. Cl. 72—102 28 Claims

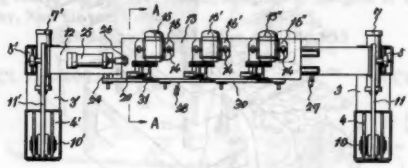


Apparatus and tool therefor for forming teeth on the peripheries of gear blanks by rolling. A plurality of teeth are provided on the tool, each thereof having a plurality of spaced projecting areas for applying localized pressures onto the workpiece and arranged in laterally offset relationship for laterally progressively roll-forming each tooth on the periphery of the gear blank, simultaneously with the inwardly radial progression thereof, without the production of chips or shavings. Means are also provided for changing the spacing between the axes of the tool and the gear blank to effect by rolling the formation of teeth on the gear blank.

3,704,613
APPARATUS FOR AUTOMATICALLY CUTTING AND REMOVING COIL BAND

Schichiro Morita, Sasebo, Japan, assignor to Sasebo Heavy Industries Co., Ltd., Tokyo, Japan

Division of Ser. No. 769,832, Oct. 23, 1968, Pat. No. 3,570,352. This application Aug. 3, 1970, Ser. No. 67,666
Int. Cl. B21f 11/00, 45/00
U.S. Cl. 72—131 1 Claim

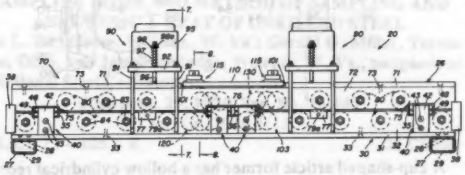


A saw cutter which cuts a coil band. The coil stops at a predetermined position. Here the coil is cut by a saw. The cut piece is placed on a belt and guided by a magnet. It travels along the belt to a pulley where it is bent into a circular shape. It is received by a receiving base operated by a cylinder and thereafter dropped for treatment.

3,704,614
ADJUSTABLE STRIP CONDITIONER

Naaman H. Keyser, Hinsdale, Ill., assignor to Interlake, Inc., Chicago, Ill.

Filed July 27, 1970, Ser. No. 58,275
Int. Cl. B21d 11/02
U.S. Cl. 72—165 24 Claims

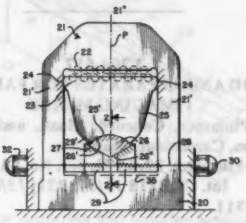


A metal strip conditioner includes a guide roll carriage for supporting a metal strip for longitudinal movement along a predetermined planar datum path and having a work section intermediate the ends thereof, a rectangular work platen mounted on the carriage above the work section and having four adjusting screws respectively mounted at the corner sections thereof for independently adjusting the positions thereof with respect to the datum path throughout a range of strip working positions, and a first assembly of edge and center working rolls carried by the platen and adjustable therewith toward and away from a like second assembly of working rolls carried by the work section of the guide carriage, the rolls of the first and second assemblies being so arranged that different combinations of edge and center working of the strip may be achieved by appropriate individual adjustment of the four drive assemblies; auxiliary guide rollers are provided adjacent to the working rolls for maintaining the unworked sections of the strip in the datum path.

3,704,615
SHEET AND STRIP FLATTENING MACHINE

Curt Munchbach, Pforzheim-Sonnenberg, Germany, assignor to Ungerer, Trma, Germany

Continuation-in-part of Ser. No. 791,979, Jan. 17, 1969, Pat. No. 3,626,736. This application June 15, 1971, Ser. No. 153,327
Int. Cl. B21d 1/02
U.S. Cl. 72—165 4 Claims

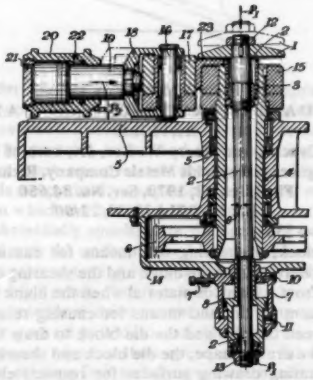


A sheet and strip flattening machine, has vertical guideways spaced apart laterally by an upper connecting bridge and lower frame base formed with horizontal guideways. Upper rolls are carried by the upper bridge. Two pairs of wedges are movably disposed in the frame base and are slidable laterally in the horizontal guideways by rotating two screws engaged with the wedges or by moving the screws axially. Two guide members formed with upper cylindrical parts and lower V-shaped are slidably carried by the wedges. A yoke is formed with bottom recesses nested on the guide members. Lower rolls are carried by the yoke. Vertical movement of the yoke and lower rolls is performed by rotating both screws simultaneously. Lateral tilting of the yoke and rolls is done by moving both screws axially. Longitudinal tilting of the yoke and rolls in a vertical plane is done by rotating either one of the screws. The guide members can each be formed of two parts, a cylindrical part and a separate bearing block.

3,704,616
COLD-WORKING PLASTIC BENDING MACHINE

Yasunori Taira, Omiya, Japan, assignor to Tokyo Giken Kogyo Kabushiki Kaisha

Filed July 9, 1971, Ser. No. 161,022
Claims priority, application Japan, July 16, 1970, 45/061749
Int. Cl. B21d 5/14
U.S. Cl. 72—167 4 Claims



The present invention relates to a cold-working plastic bending machine having a tiltably adjustable press-plate

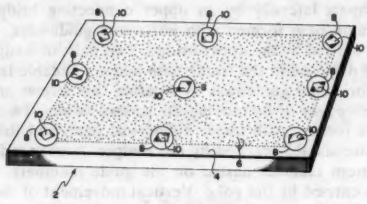
located slightly ahead of the main roller of the machine. A plurality of side rollers is provided, one on each side of the main roller. The force of the press-plate acting on the bend-compression side of a workpiece that passes between the main roller, the press-plate and the side rollers is balanced with the force of the side rollers which bend the workpiece so that the bending work is accomplished without twisting or creasing the workpiece.

3,704,617

METHOD AND APPARATUS FOR FABRICATING IMAGING MEANS

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 22, 1970, Ser. No. 83,029
Int. Cl. B21d *11/04*; B21j *13/00*
U.S. Cl. 72—311 **20 Claims**



A method and apparatus is provided for fabricating novel imaging apparatus.

The subject invention accomplishes its purpose by employing a stylus which is driven into a base to produce a facet therein which is normal to the longitudinal axis of the stylus. he stylus is secured in predetermined relation with respect to a pair of points and is caused to traverse the surface of said base until a desired portion thereof is sufficiently covered with said facets. One of said pair of predetermined points corresponds to a point source of illumination or other electromagnetic radiation and the other of said pair of predetermined points corresponds to a point to which it is desired to reflect any electromagnetic radiation incident on said faceted base from said point source.

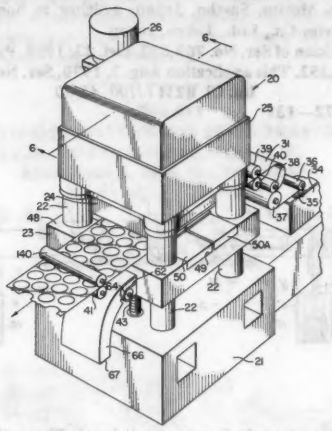
3,704,618

METHOD AND APPARATUS FOR MAKING A DRAWN ARTICLE

Daniel S. Cvacho, and Harry W. Lee, Jr., both of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Oct. 28, 1970, Ser. No. 84,650
Int. Cl. B21d *38/00*, *22/00*
U.S. Cl. 72—336 **28 Claims**

A die block, a shearing die, means for causing relative movement between the die block and the shearing die to shear an article from a blank of material when the blank is disposed therebetween, a ram, and means for causing relative movement between the ram and the die block to draw the sheared article into a drawn shape, the die block and shearing die having cooperating drawing surfaces for respectively engaging against opposed sides of the sheared article and from between which the sheared article is adapted to be drawn by the drawing operation of the ram and the die block. The apparatus has means for maintaining a predetermined spacing between the drawing surfaces of the die block and the shearing die during the entire drawing operation of the sheared article therefrom



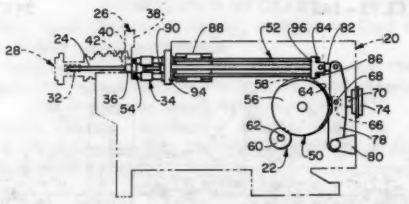
so as to tend to prevent adverse ears at the outer peripheral edge of such drawn article.

3,704,619

REDRAW BLANKHOLDER POSITIONING MECHANISM FOR CUP-SHAPED ARTICLE FORMERS SUCH AS METALLIC CAN BODY FORMERS AND THE LIKE

Elpidifor Paramonoff, Los Angeles, Calif., assignor to Standun, Inc., Compton, Calif.

Filed June 14, 1971, Ser. No. 152,915
Int. Cl. B21d *24/04*
U.S. Cl. 72—349 **29 Claims**



A cup-shaped article former has a hollow cylindrical redraw blankholder which moves from a rearward article feed position axially forwardly into a rearwardly opening cup-shaped article and positions the article against a redraw die ring maintaining a predetermined pressure thereon while a reciprocal ram moves forwardly internally of the blankholder and article engaging the article and carrying it forwardly between the blankholder and die ring in a drawing operation. The blankholder is moved forwardly and rearwardly between rearward article feed and forward article drawing positions and is maintained precisely positioned in the article drawing position by securement of the blankholder to a blankholder mounting frame secured to forward ends of spaced, reciprocal rods, the rods extending rearwardly of the former and being pivotally connected to upper ends of pivotal cam follower arms. The cam follower arms mount cam followers thereon engaged with cam surfaces of rotatable cams, the cam followers being maintained against the cam surfaces under constant pressure of retention air cylinders. A rearwardly compressible and forwardly expansible air cylinder is formed in the blankholder mounting frame for securing the blankholder to the blankholder mounting frame so as to exert a force against the cup-shaped article resisted by the cup-shaped article engagement

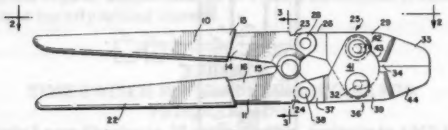
against the redraw die ring during movement of the article from the blankholder through the die ring by the ram. A motion limiting mechanism is associated with the blankholder mounting frame air cylinder and the blankholder retaining the blankholder spaced from the die ring as the article leaves the blankholder and finally passes completely through the die ring.

3,704,620

COMPOUND ACTION TOOL

Irving Allen, Westbrook, Conn., assignor to Sargent & Company, New Haven, Conn.

Filed May 25, 1971, Ser. No. 146,633
Int. Cl. B21d *9/08*
U.S. Cl. 72—409 **4 Claims**



The specification discloses a compound action tool of the pliers type which is commonly employed for crimping purposes. The tool comprises a pair of handles each having a laterally extending ear at one end with the ears overlapping and pivotally connected. An arm is pivoted to the end of each handle and terminates in a jaw. Each arm has a lobe extending laterally towards the other arm. Each arm is formed with an arcuate slot in the region of the lobe with each slot receiving a pin carried by the other lobe. The end edge of each lobe is formed as a curved cam surface which is engaged by a portion of the jaw on the other arm which projects therefrom and overhangs the cam surface.

ERRATUM

For Class 72—477 see:
Patent No. 3,704,622

3,704,621

SAMPLING BOMB AND METHOD OF SAMPLING AND ANALYZING A HEAT OF UNKILLED STEEL

Rox L. Zickefoose, Weirton, W. Va.; Gerald G. Miller, Toronto, Ohio, and James R. Judge, Weirton, W. Va., assignors to National Steel Corporation

Filed Sept. 29, 1970, Ser. No. 76,447
Int. Cl. G01n *1/12*
U.S. Cl. 73—425.4 R **21 Claims**

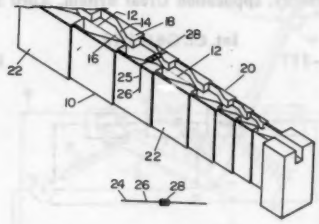
A novel method of sampling a heat of molten unkilled steel to produce a sound solidified test ingot of magnesium killed steel which is suitable for analysis. An improved sampling bomb is also provided for use in practicing the sampling method of the invention. It is necessary to take and analyze only one sample for all of the common elements normally contained in steel. The prior art method requires that at least two samples be taken, and that at least two analysis be made to obtain comparable results.

3,704,622

ARTICLE FORMER

Theodore H. Cole, P. O. Box 1993, Homes Beach, Fla.

Filed Oct. 13, 1969, Ser. No. 865,769
Int. Cl. B21d *31/00, 43/00*
U.S. Cl. 72—477 **9 Claims**



An apparatus for centering and bending articles such as resistors, diodes, capacitors and the like to uniform and precise shapes in a rapid manner is provided.

ERRATA

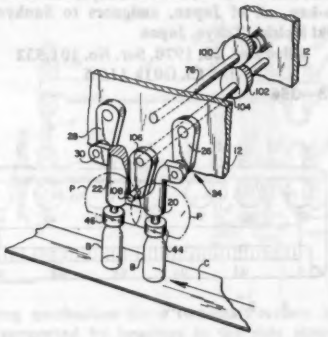
For Classes 74—473 thru 351—39 see:
Patents Nos. 3,704,982 thru 3,705,003

3,704,623

DRIVE FOR A CONTAINER PROCESSING MACHINE

Constantine W. Kulig, Windsor, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Filed July 22, 1971, Ser. No. 164,989
Int. Cl. G01n *3/10*
U.S. Cl. 73—37 **24 Claims**

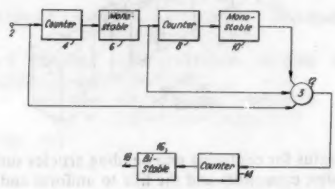


A drive for moving a container processing apparatus at a substantially uniform speed with a line of containers advancing on a conveyor is disclosed in a machine wherein glass bottles are to be pressure tested and the processing apparatus comprises at least one pressure testing head. The pressure testing heads are cyclically swept along a segment of a moving conveyor on which the bottles to be tested are carried and, in order to substantially synchronize the speed of the pressure testing head with the uniform speed of the bottles on the conveyor, the pressure testing head is mounted on the orbiting link of a parallel crank, four bar linkage which is rotated by means of a rotational drive mechanism having an elliptical gear set. The gear set provides a variable drive ratio and, when driven by means of a constant speed motor, modulates the speed of the orbiting link and the pressure heads so that the heads sweep into engagement and accurately track the bottles during the pressure testing portion of the orbit. The elliptical gears also cause the pressure heads to travel along the return portion of the orbit at a more rapid speed in preparation for the next pressure testing cycle.

3,704,624
VEHICLE TESTING APPARATUS AND TO SAFETY DEVICES THEREFORE

John Anthony Marten, Holt, and Bernard Arthur Gee, Marham, both of England, assignors to Suntester Limited, King's Lynn, Norfolk, England

Filed April 7, 1971, Ser. No. 131,933
Claims priority, application Great Britain, April 10, 1970, 17,247/70
Int. Cl. G01l 5/13
U.S. Cl. 73—117 11 Claims

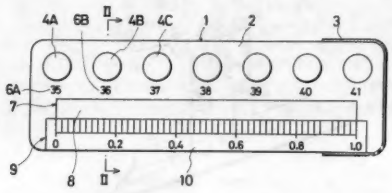


The disclosure describes a safety device for a chassis dynamometer in which a signal representative of the speed of rotation of the dynamometer's rollers is processed to give a signal representative of the temperature of the tires of a vehicle being tested on the dynamometer. The signal is dependent on the time integral of S^x where x is approximately 3 and S represents the speed of a dynamometer roller. When the temperature representative signal reaches a predetermined maximum safe value, an alarm is triggered.

3,704,625
THERMOMETER USING LIQUID CRYSTAL COMPOSITIONS

Hiroshi Seto; Mituko Ueda, both of Tokyo, and Humio Segawa, Saitama-ken, all of Japan, assignors to Sankyo Keiryoki Kabishiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1970, Ser. No. 101,532
Int. Cl. G01k 11/16
U.S. Cl. 73—356 1 Claim



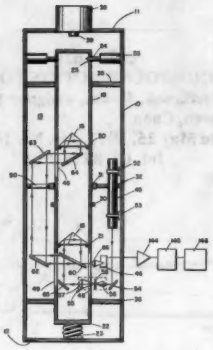
A thermometer comprising a plurality of temperature responsive sections formed of liquid crystal compositions and which change their color in response to a specific range of prime temperature. Each temperature responsive section in its responsive state produces a different color depending upon temperature within the specific range. The color thus produced can be numerically identified by reading a comparable chromatic pattern.

3,704,626
INTERFEROMETRIC METHOD AND APPARATUS FOR MEASURING GRAVITY GRADIENTS

Richard S. Stone, Lexington, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 25,153, April 2, 1970, abandoned. This application Aug. 7, 1970, Ser. No. 62,008
Int. Cl. G01v 7/04, 7/12
U.S. Cl. 73—382 14 Claims

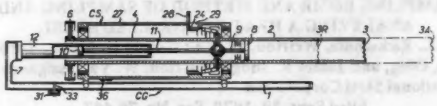
Method and apparatus for measuring gravity gradients directly. Two retroreflectors are caused to experience free flight and the radiation reflected by those retroreflectors during this free flight is directed to a radiation receiver which senses and measures the temporal variations of intensity of the interfering reflected radiation beams. The rate of change in interference frequency over a number of consecutive time periods of equal duration is determined and the rate of change of this signal frequency is used as a direct measurement of a gravity gradient.



3,704,627
SUGAR CAN SAMPLER

Pierre Emile Beaudoux, 23 avenue du Chateau, 76 Dieppe, France

Filed Aug. 30, 1971, Ser. No. 176,188
Claims priority, application France, Sept. 2, 1970, 7031882
Int. Cl. G01n 1/08
U.S. Cl. 73—423 R 15 Claims



Sugar cane sampler comprising a probe composed of a hollow cylinder with a mouth in the form of a cylindrical saw blade mounted so as to rotate around its axis on a probe chassis and an ejector ram mounted so as to slide in the said cylinder, as well as a guide chassis on which the probe chassis is mounted so as to slide parallel to the axis of the probe and a selective connecting drive to give an advance or reverse movement parallel to the said axis, either to the assembly consisting of the cylinder and ram or to the ram alone, the drive being in the form of a jack, the casing of which is fixed to the guide chassis and the piston of which is directly connected by its rod to the ejector ram.

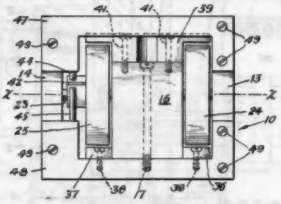
3,704,628
FLUIDIC ANGULAR ACCELERATION SENSOR

Robert F. Turek, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 24, 1971, Ser. No. 118,264
Int. Cl. G01p 15/02
U.S. Cl. 73—515 4 Claims

A rotationally balanced air bearing-supported inertial or seismic mass having squeeze-film damping is arranged such

that a flapper connected to the mass proportions airflow through parallel orifices legs of a fluidic bridge network under



applied angular acceleration to provide a differential pressure output linearly related thereto.

3,704,629

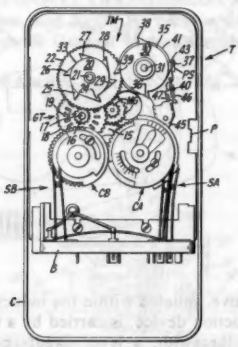
TIME SWITCH WITH INDEXING MEANS FOR PROGRAMMING

Edwin Larry Skarivoda, Manitowoc, Wis., assignor to AMF Incorporated

Filed June 23, 1971, Ser. No. 155,763

Int. Cl. G05g *21/00*

U.S. Cl. 74—3.52 **8 Claims**



In a time switch having switch actuating cam means which remains quiescent until indexed, indexing means for programming the time switch including a rotatably driven program member and a selector member disposed side by side each having a series of arcuately spaced lobes. Each of the lobes of the program member have a selected axial length and axial position while the lobes of the selector member are on different axially spaced planes which extend through different number of lobes of the program member. The selector member is releasably interlocked to an indexing arm and is rotatable when released to position one of its lobes for engagement by a predetermined number of lobes of the program member.

3,704,630

MECHANISM FOR CARRYING A TRANSDUCER OVER AN ELONGATED PATH

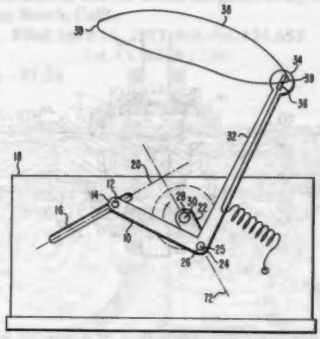
Neal Hepner, Birmingham, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 2, 1970, Ser. No. 77,450

Int. Cl. F16h *21/18*

U.S. Cl. 74—47 **3 Claims**

A mechanism for bodily transporting a transducer over a closed, elongated path in which one portion of an arm is slidably coupled to a rotatable member. A transducer carrier attached to the arm is transported over a path defined by the



composite motions of the two portions of the arm, thus carrying the transducer in a closed elongated loop.

3,704,631

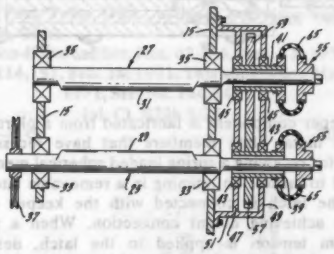
ADJUSTABLE PHASE TWO SHAFT VIBRATOR

Walter R. Marks, Greenfield, Wis., assignor to Rex Chainbelt, Inc., Milwaukee, Wis.

Filed July 21, 1971, Ser. No. 164,636

Int. Cl. F16h *33/00*

U.S. Cl. 74—61 **7 Claims**



A vibrating mechanism for a two-shaft screen. Eccentric shafts are supported by bearings in the side plates of the screen frame or in mounts above or below the side plates. Each shaft has a coaxial torque tube to which it is connected by a flexible elastic coupling. The torque tubes are interconnected by meshing gears. One of the eccentric shafts has a sheave for a drive belt. The flexible elastic couplings permit the shafts to be rotatably adjusted relative to their torque tubes while the screen is stopped. When the screen is started up again, the forces due to the eccentricity of the two shafts bear a new phase relationship. This results in a new direction for the reciprocating motion of the screen.

3,704,632

REVOLVING STROKE DRIVE

Joseph Orosz, 324 Machen, Toledo, Ohio

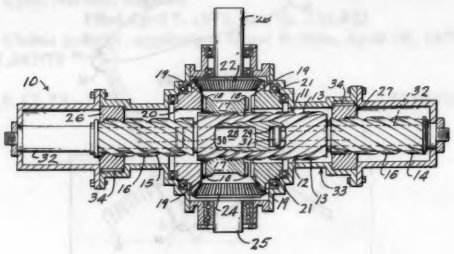
Filed July 2, 1970, Ser. No. 51,963

Int. Cl. F16h *25/12*

U.S. Cl. 74—127 **3 Claims**

A drive unit for translating reciprocating motion into unidirectional rotary motion is disclosed. The drive unit incor-

porates an elongate reciprocating cylinder which comprises a center section having a spiral gear on its outer surface. The spiral gear engages an internal spiral sliding clutch element and fixed internal spiral hubs. The internal spiral sliding clutch



element alternately engages either of a pair of pinion gears which in turn engage opposing drive gears. An output shaft connected to the drive gears rotates in a single direction in response to each reciprocation of the cylinder.

3,704,633

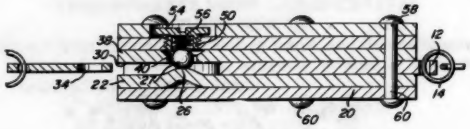
TENSION MEMBER OVERLOAD RELEASE MECHANISM

Keith E. Iverson, Box 334, Hinesburg, Vt.

Filed Jan. 25, 1971, Ser. No. 109,510

Int. Cl. A44b *11/25, 17/00*

U.S. Cl. 24—230 AL **4 Claims**



A keeper component is fabricated from a plurality of juxtaposed metal plate members that have recesses formed therein for receiving a spring loaded spherical member that is adapted to engage an opening in a removable latch member when the latch is connected with the keeper component thereby achieving detent connection. When a preselected minimum tension is applied to the latch, detent action between the spring loaded spherical member and a frusto-conical projection within the aperture formed in the latch is terminated whereby the latch becomes released.

3,704,634

INFINITELY VARIABLE CONE PULLEY TRANSMISSION

Rudolf Schrodt, Kronberg, Germany, assignor to Reimers Getriebe A.G., Zug, Switzerland

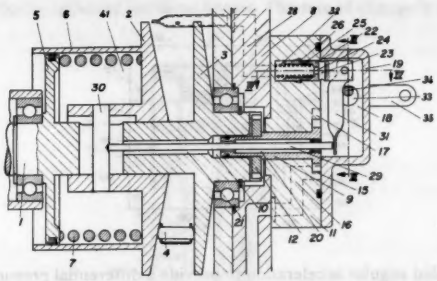
Filed April 21, 1971, Ser. No. 135,988

Claims priority, application Germany, April 24, 1970, P 20 19 848.5

Int. Cl. F16h *55/52*

U.S. Cl. 74—230.17 F **7 Claims**

In an infinitely variable cone pulley transmission the cone pulley pair on one of the two shafts (driving or driven) is pressed together by a helical coil spring and on the other shaft by a hydraulic force. On the hydraulically operated side the axially displaceable cone disc and the transmission shaft form together a cylinder and piston arrangement. A particularly compact dimensioning of the transmission and the control device is achieved by arranging the pressure pump housing immediately adjacent the transmission housing. The pressure pump housing contains in one block a slide valve for regulating the hydraulic pressure, lines for guiding the pressure liquid, first mechanical elements for automatically sensing and



controlling the transmission ratio, and second mechanical means for manually overriding the automatically adjusted ratio.

3,704,635

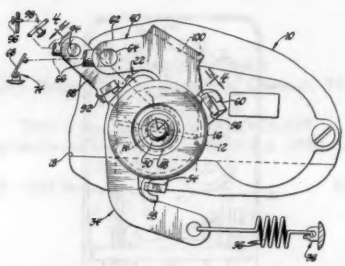
THROTTLE RETURN SPRING REDUNDANCY SYSTEM

Phillip V. Eshelman, 19417 Greenwald, Southfield, Mich.

Filed June 1, 1971, Ser. No. 148,310

Int. Cl. G05g *11/00*

U.S. Cl. 74—482 **8 Claims**



A throttle valve, situated within the induction passage of a fuel or air induction device, is carried by a throttle shaft for fixed rotation therewith; a lever fixedly connected to the throttle shaft is operatively connected to a remotely situated operator's foot-operated throttle control; a first throttle return spring is operatively connected to the first lever for returning the throttle valve to an idle position whenever the foot-operated throttle control is released; a second safety spring is provided for assuring the movement of the throttle valve to the idle position in the event that, for example, either the first throttle return spring or the associated throttle control linkage should fail while the throttle valve is in either a partly or fully opened position; and manually operated lever means is provided for at times operatively engaging the lever fixedly secured to the throttle shaft in order to thereby rotate the throttle valve toward an open position against the resistance of the safety spring.

3,704,636

COMBINED CRANKSHAFT FOR MULTI-CYLINDER PISTON ENGINES, ESPECIALLY INTERNAL COMBUSTION ENGINES

Ferdinand V. Piech, Gahkopf, Germany, assignor to Firma Dr. hoe. f. Porsche K.G., Stuttgart, Germany

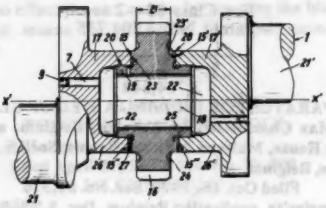
Filed May 4, 1970, Ser. No. 34,130

Int. Cl. F16c *3/10*

U.S. Cl. 74—597 **10 Claims**

Jointed crankshaft for multi-cylinder piston engines, especially internal combustion engines, which crankshaft is split in

the area of the crankpin and joined together through a butt joint by means of electron-beam welding. The crankshaft is split perpendicularly in the plane of one or more shaft journals and is provided at the butt joints of adjacent shaft journals with annular faces facing each other and, through the formation of ventilated hollow space, are joined together. An intermediate layer which serves as an adhesion joint can be interposed between the faces of the shaft journals. The crankshaft can also be provided with a drive gear having a spigot which ensures a satisfactory joint and accurate centering of the pieces to be welded.

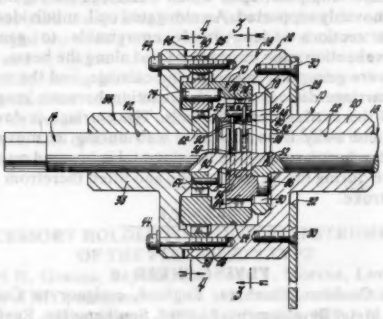


3,704,637

TORQUE RESPONSIVE TRANSMISSION MECHANISM

Russell L. Morden, and Ralph W. Perkins, both of Lansing, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed April 5, 1971, Ser. No. 131,267
Int. Cl. F16h *5/54*
U.S. Cl. 74—751 **3 Claims**



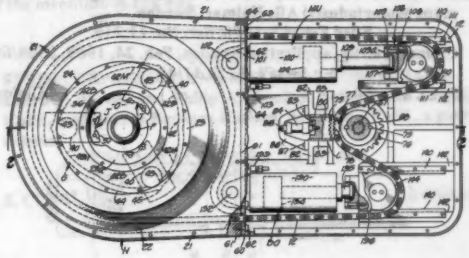
A mechanism for transmitting torque from a rotating input shaft to a rotating output shaft and for automatically increasing the transmission ratio in response to the magnitude of the applied torque, the mechanism including a planetary gear train driven by the input shaft, a pawl member rotatable as a unit with the output shaft and bodily movable relative thereto in a radial direction, a cam on the input shaft and a follower on the output shaft. During conditions of low torque input a spring urges the pawl member to a retracted position coupling the output shaft to the input shaft to establish a direct drive unitary transmission ratio therebetween. When torque exceeding a predetermined magnitude is applied to the input shaft the cam and follower cooperate to force the pawl member to an extended position coupling the output shaft to the planet carrier of the planetary gear train, thus establishing a torque transmission ratio between the shafts which exceeds unity.

3,704,638

POWER PIPE TONG WITH TORQUE RESPONSIVE BRAKE MEANS

Garth Fancher Nicolson, Huntington Beach, and Carl Alfred Wilms, La Habra, both of Calif., assignors to Byron Jackson Inc., Long Beach, Calif.

Filed April 16, 1971, Ser. No. 134,655
Int. Cl. B25b *17/00*
U.S. Cl. 81—57.18 **10 Claims**



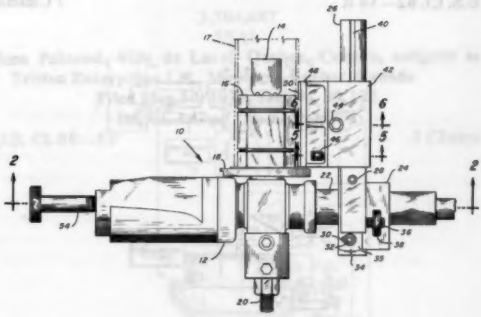
A power pipe tong having pipe gripping jaws actuated to pipe engaging position by rotation of a fluid motor driven ring relative to a jaw carrying ring which is initially held against rotation by a brake, the rings rotating together after the pipe is gripped, and in which the brake is pressure operated to apply braking friction at a value determined by the torque of the fluid motor to apply maximum braking friction when the gripping means experience least resistance and minimum braking friction when the gripping means experience maximum resistance.

3,704,639

TAPERING TOOL FOR TUBULAR ARTICLES

Rudolph G Foss, Tulsa, Okla., assignor to Unique Industries, Inc., Tulsa, Okla.

Continuation-in-part of Ser. Nos. 63,366, Aug. 13, 1970, and Ser. No. 114,191, Feb. 10, 1971. This application May 17, 1971, Ser. No. 144,045
Int. Cl. B23b *3/26*
U.S. Cl. 82—4 C **20 Claims**



This invention comprises a tool for cutting an external taper on the end of a tubular article, such as a fiberglass pipe. It comprises a supporting member which rotatably carries an expandable collet mounted on a collet shaft. An arm is slidably positioned in the supporting member substantially perpendicular to said outlet shaft. The arm carries a cutter blade assembly. A cam is cut into the collet shaft with a cam follower on a pump, which supplies fluid under pressure to a cylinder, the piston of which is connected to the arm. pRotation of the cutter blade assembly about the collet shaft causes fluid under pressure to flow into the cylinder, causing the piston and the

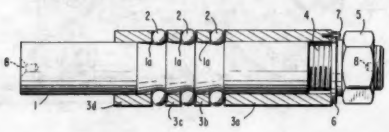
arm to be displaced, bringing the cutter blade into contact with the pipe held by the collet. The cutter blade assembly which is adapted to carry a plurality of cutting blades in turret fashion, is rotatably positioned on a support bar fastened to said first shaft.

3,704,640

DEVICE FOR MOUNTING AND CENTERING A WORK PIECE FOR INSTANCE IN A MACHINE TOOL

Sven Gunnar Forsstrom, Kalmar, Sweden, assignor to Bergmans Motorindustri AB, Kalmar, Sweden

Filed Feb. 13, 1970, Ser. No. 11,218
Claims priority, application Sweden, Feb. 24, 1969, 2506/69
Int. Cl. B23b *31/40*
U.S. Cl. 82—44 **4 Claims**



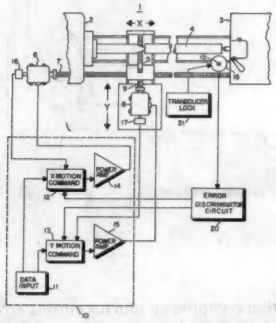
A device for mounting and centering a work piece with circular inner and/or outer surfaces e.g. in a machine tool, comprising two or more identical conical surfaces formed on a shaft or sleeve and supporting each a series of balls or similar members, which are radially displaceable to transfer the engagement with the circular surface of the work piece by relative axial displacement between the shaft or sleeve and one or more spacer members co-operating with the balls. The balls are arranged to engage directly with the circular surface of the work piece or to transmit the engaging action by means of at least three entirely separate and radially displaceable transfer members co-operating with the balls and equally distributed about the periphery of the shaft or sleeve.

3,704,641

AUTOMATIC TOOL SETTING SENSOR

John M. Rhoades, Waynesboro, Va., assignor to General Electric Company

Continuation-in-part of Ser. No. 802,973, Feb. 27, 1969, abandoned. This application May 27, 1971, Ser. No. 147,679
Int. Cl. B23b *3/28*
U.S. Cl. 82—14 R **7 Claims**



A numerical control system for a machine tool including an electromechanical transducer for producing compensating signals proportional to errors in the setting of a cutting tool in its toolholder relative to a programmed setting. The numerical control is programmed to drive the toolholder to a predetermined position in which the tip of the cutting tool engages a deflectable stylus of the transducer. The stylus is mechanically locked in its deflected position by an electromagnetic brake. Sensing coils within the transducer provide continuous signals indicative of the deflected position of the stylus and thus of any errors in the setting of the cutting tool. This information is used to continually modify input data to compensate for those errors.

ERRATUM

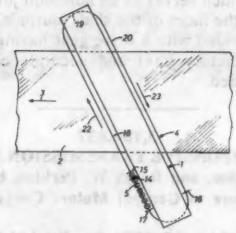
For Class 83—2 see:
Patent No. 3,704,735

3,704,642

APPARATUS FOR INCISING A WEB OF GLASS

Jacques Max Charles Dryon, Auvelais, Belgium, assignor to Ateliers Heuze, Malevez & Simon Reunis, Societe Anonyme, Auvelais, Belgium

Filed Oct. 16, 1970, Ser. No. 81,376
Claims priority, application Belgium, Dec. 8, 1969, 82479
Int. Cl. B26d *3/08*
U.S. Cl. 83—11 **7 Claims**



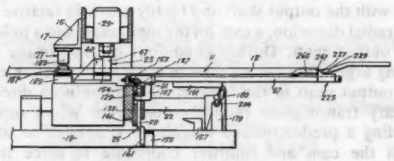
An apparatus for incising an advancing glass web passed continuously upon horizontal transporter means. The apparatus comprises a beam extending across the web and defining a closed loop path, upon which a carriage having incising tools is movably supported. An elongated coil, subdivided into different sections independently energizable to generate respective section eddy currents is fixed along the beam. Eddy currents are generated in part of the carriage, and the motion of the carriage derives from the reaction between magnetic fields of the carriage and the coils. The carriage is deviable toward and away from the glass web during its movement around the beam, so that the incising tool is lowered on to the glass web during the incision stroke and lifted therefrom on its return stroke.

3,704,643

FLYING SHEAR

William Cookson, Fareham, England, assignor to Cookson Sheet Metal Developments Limited, Southampton, England

Filed Nov. 20, 1970, Ser. No. 91,373
Claims priority, application Great Britain, Nov. 25, 1969, 57,644/69
Int. Cl. B23d *25/04*
U.S. Cl. 83—294 **12 Claims**



A flying shear suitable for cutting into predetermined lengths a moving supply of material for example metal sheet

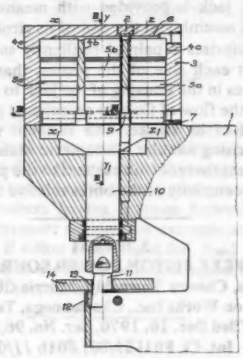
which may be a formed sheet passing from a roll forming machine. The flying shear comprises a shear blade assembly including shear blades between which the material can pass, means whereby the shear blade assembly is caused by the material to move forward with the material leaving a predetermined length of material in front of the blades, ram means to cause the blades to close together to cut the material, means responsive to the forward movement to cause the ram means to operate to effect the cut, means for opening the blades after the cut and means for retracting the blade assembly for another cut.

3,704,644

PUNCHING MACHINE-TOOLS

Jean Cloup, 33 Latresne, France

Filed April 21, 1970, Ser. No. 30,508
Int. Cl. B26d 5/12
U.S. Cl. 83—639 **2 Claims**



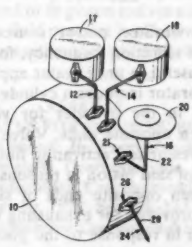
This invention relates to an improvement in punching machine tools comprising a frame in which is mounted a slide carrying at one of its ends a punching tool and connected at its other end to hydraulic control means, wherein a plurality of small diameter hydraulic cylinders are mounted on the frame of the machine which has a relatively small front width, in which cylinders pistons unitary with the slide are slidably mounted, said cylinders having their axes located in the same plane extending along the largest dimension of the frame.

3,704,645

ACCESSORY HOLDER FOR MUSICAL INSTRUMENTS OF THE PERCUSSION TYPE

Robert N. Grauso, Bayside, and John J. Morena, Levittown, both of N.Y., assignors to C. F. Martin & Co., Nazareth, Pa.

Filed Sept. 1, 1971, Ser. No. 176,939
Int. Cl. G10d 13/02
U.S. Cl. 84—421 **8 Claims**



An accessory holder for musical instruments of the percussion type providing means for adjusting an accessory in an infinite number of positions relative to the instrument for the convenience of a musician. The accessory holder is provided with a swivel ball joint on both ends of an angular support rod, one end being adapted to be mounted on an instrument such as a base drum, the other end being adapted to be mounted to an accessory such as a tom-tom, snare drum or cymbal, etc. Tension screws are provided to lock the swivel ball joints and angular support in any selected position.

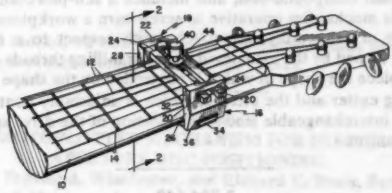
The aforementioned Abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,704,646

STRING DEPRESSOR AND METHOD OF USING SAME

Richard P. Davis, and Philip A. Dunlap, both of San Diego, Calif., assignors to Barbara Hanson, San Diego, Calif., a part interest

Filed July 23, 1970, Ser. No. 57,545
Int. Cl. G10g 7/02
U.S. Cl. 84—454 **1 Claim**



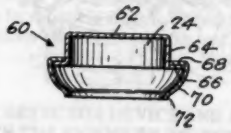
A mechanical tuning aid for guitar-like stringed instruments enabling an optimum tonality and balanced tuning technique with both hands of the musician free to accomplish peg manipulation, that is, one hand for string tension adjustment with the other hand free for simultaneous strumming. The tuning aid is temporarily fastened transversely on the neck of the instrument and a button is adjustably positioned to depress the strings selectively and to hold the same depressed on the predetermined fret until the next string is tuned in relation thereto.

3,704,647

SEAL

Jean Painaud, Ville de Laval, Quebec, Canada, assignor to Tritton Enterprises Ltd., Montreal, Quebec, Canada

Filed May 20, 1970, Ser. No. 39,123
Int. Cl. A47g 3/00; F16b 15/02
U.S. Cl. 85—55 **7 Claims**



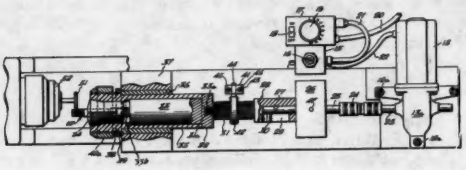
A seal device for sealing the heads of screws, bolts or the like against tampering. The seal device has a cap portion with a cavity, a peripheral flange and a depending deformable skirt. It is preferably of a one-piece construction made of material such as steel or tin, and is adapted to be used with screws, bolts or the like which have an inwardly stepped shoulder at the base of the head to receive the deformed skirt of the seal device. The invention also provides a method of sealing screws or the like using the above type of seal.

3,704,648

THREAD MILLING ATTACHMENT FOR ENGINE LATHES

Walter S. Burfoot, 1734 Billings St., Sarasota, Fla.

Filed July 12, 1971, Ser. No. 161,559
Int. Cl. B23g 1/32
U.S. Cl. 90—11.62 8 Claims



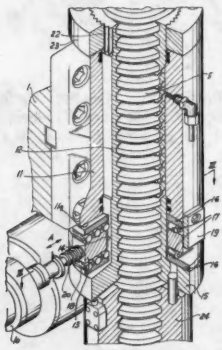
A thread milling attachment for engine lathes, particularly for milling a wide variety of special threads on workpieces, is described. The attachment device is readily attachable to an ordinary lathe by mounting to its cross-slide in substitution for the usual compound-rest, and includes a self-powered drive spindle mechanism operative to screw-turn a workpiece forewardly or rearwardly, selectively, with respect to a milling cutter turned by the associated lathe for milling threads on the workpiece the shape of which is controlled by the shape of the milling cutter and the pitch of which is adjustably controlled by an interchangeable lead-screw portion of the drive spindle mechanism.

3,704,649

DEVICE FOR ADJUSTING THE CROSS-RAIL ON PORTAL TYPE MACHINE TOOLS

Toni Von Den Hoff, and Ewald Weber, both of Coburg, Germany, assignors to Werkzeugmaschinenfabrik Adolf Waldrich Coburg, Coburg, Bayern, Germany

Filed Jan. 27, 1971, Ser. No. 110,019
Claims priority, application Germany, Feb. 6, 1970, P 20 05 555.4
Int. Cl. B23q 23/00
U.S. Cl. 90—15 6 Claims



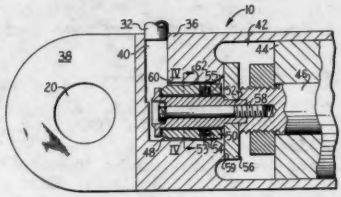
A device for adjusting the cross-rail on a portal type machine tool wherein an adjusting device is provided between an abutment member and a nut and which is movable transversely of the spindle axis by means of an adjusting motor and is provided with a slot extending in its direction of movement for the passage of the elevating screw. It is through this structure that one end of the cross-rail may be vertically adjustable independently of the other end of the cross-rail to maintain same in a generally horizontal relationship parallel to, for example, the plane of the worktable.

3,704,650

HYDRAULIC JACK STROKE CUSHIONING MEANS

Lawrence F. Berg, Lockport, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed March 29, 1971, Ser. No. 128,822
Int. Cl. F15b 15/22
U.S. Cl. 91—395 12 Claims



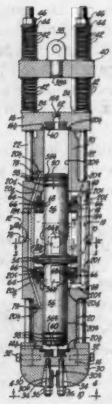
A hydraulic jack is provided with means to cushion the piston and rod assembly at the end of its stroke. The cushioning means comprises a pair of resiliently supported sleeves, one placed on each side of the piston, that cooperate with respective bores in the housing of the jack to serve to progressively restrict the flow of fluid to an exhaust port as the piston nears the end of its stroke. The resilient mounting of the sleeves, comprising annular elastomeric seals, permits limited radial movement thereof with respect to the piston to compensate for any eccentricity of the bores relative to the piston.

3,704,651

FREE PISTON POWER SOURCE

John J. Kupka, Chester Township, Morris City, N.J., assignor to Vulcan Iron Works Inc., Chattanooga, Tenn.

Filed Dec. 10, 1970, Ser. No. 96,755
Int. Cl. F01l 21/02; F01b 11/02
U.S. Cl. 91—232 5 Claims



A free piston vibrator power source for applications wherein control of vibration frequency, force, and amplitude is important and useful in underwater applications as a sonic generator. The vibrator includes a cylinder and a fluid piston slidably mounted in the cylinder for vibrating reciprocal movement between opposite ends. Valve means is provided for introducing pressurized activating fluid into the cylinder on opposite sides of said piston in response to the position of said piston between opposite ends of said cylinder and a discharge port is provided for exhausting fluid from opposite sides of the piston in response to the position thereof. Fluid storage chambers are provided at opposite ends of the cylinder and rod-like piston members on opposite sides of the piston are slidable in the chambers which contain compressible fluid at pressures independent of the activating fluid pressure.

3,704,652

HYDRAULIC BRAKES

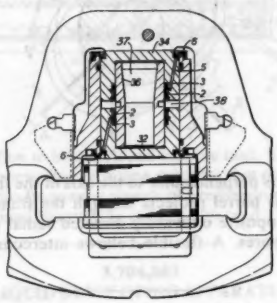
Hermann H. Hoenick, Immendorf, Germany, assignor to Girling Limited

Filed June 8, 1970, Ser. No. 44,333

Claims priority, application Great Britain, June 9, 1969, 29,078/69

Int. Cl. F01b 7/02

U.S. Cl. 92—5 3 Claims



The invention relates to an improved sealing arrangement for an hydraulic brake actuator comprising a pair of pistons having their skirts slidingly and sealingly engaged over a common sleeve. Each sealing arrangement comprises a pair of annular sealing members having a space between them connected to a low pressure region (for example at atmospheric pressure) so that if either seal should fail, fluid will leak into the space and away to the lower pressure region, so as to give a visual indication of seal failure.

3,704,653

SPRING-FORCE APPLYING MEANS

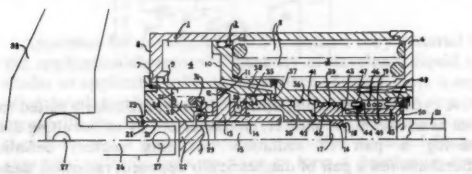
Horatio Leslie Higgins, London, England, assignor to Westinghouse Brake and Signal Company Limited, London, England

Filed March 11, 1971, Ser. No. 123,271

Claims priority, application Great Britain, May 21, 1970, 24,630/70

Int. Cl. F01b 9/00

U.S. Cl. 92—29 5 Claims



A spring-brake actuator wherein the piston acted upon by the spring is connected to its piston rod via a clutch held disengaged only so long as fluid pressure is effective on the piston to render the spring inoperative to apply the brake.

3,704,654

APPARATUS FOR FORMING BOXES

Oldrich Bayer; Josef Snasel; Jiri Premyslovsky, and Frantisek Smalcl, all of Gottwaldov, Czechoslovakia, assignors to Svit, narodni podnik, Gottwaldov, Czechoslovakia

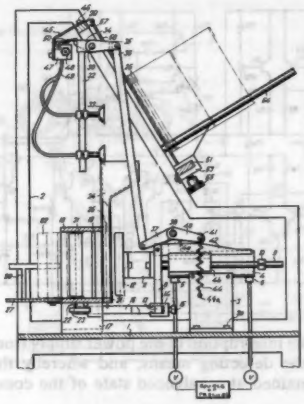
Filed May 19, 1971, Ser. No. 144,801

Claims priority, application Czechoslovakia, May 26, 1970, 3649/70

Int. Cl. B31b 15/00

U.S. Cl. 93—51 R 5 Claims

Apparatus for forming boxes or box covers, the apparatus having feeding means and forming means that are both driven by a common driving means, the forming means being operable in a reciprocating, substantially arcuate motion to impart



vertical motion to box blanks or box cover blanks prior to operation of the forming means on the blanks.

3,704,655

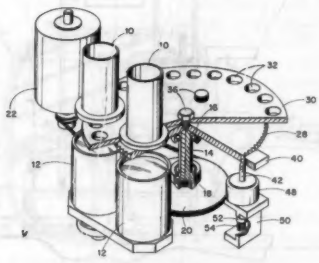
PHOTOPLOTTER MECHANISM FOR PRECISE APERTURE DISC POSITIONING

Gilbert Fryklund, Winchester, and Richard E. Denis, Beverly, both of Mass., assignors to Computervision Corporation, Burlington, Mass.

Filed May 5, 1971, Ser. No. 140,428

Int. Cl. G03b 29/00

U.S. Cl. 95—12 10 Claims



A precise positioning mechanism for positively orienting an aperture disc of a photoplotter. The mechanism inserts an index element into a ring of teeth mounted on or in cooperation with the aperture disc to angularly position the aperture disc so that the optical head axis is concentric with the indexed aperture. Also, an assembly process for mounting the aperture disc on its rotatable shaft to ensure initial radial and angular concentricity of optical head axis and apertures.

3,704,656

EXPOSURE DETECTOR DEVICE AND A CAMERA SYSTEM WITH THE EXPOSURE DETECTOR DEVICE

Mitsutoshi Ogiso, Kawasaki, and Katsuhiko Yamada, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed April 12, 1971, Ser. No. 133,080

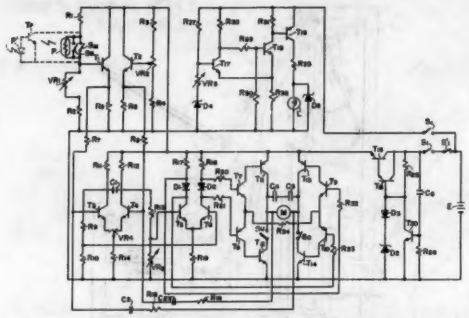
Claims priority, application Japan, April 14, 1970, 45/31852

Int. Cl. G03b 19/12

U.S. Cl. 95—42 11 Claims

An exposure detector device for a camera comprising a comparator circuit having at least a photo-sensitive element

and a variable resistance element, a detecting means being connected to the comparator circuit, a power source for the comparator circuit and the detecting means, and a switching



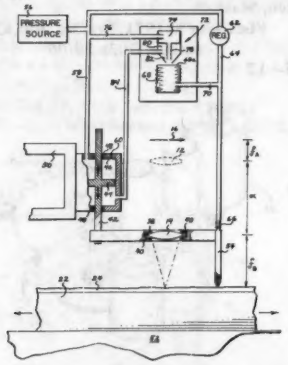
means for the interruption of the power supply from the power source to the detecting means, and whereby the detecting means is retained at a balanced state of the comparator circuit.

3,704,657

ADAPTIVE OPTICAL FOCUSING SYSTEM

Joseph J. Sliwkowski, Framingham, and Gilbert Fryklund, Winchester, both of Mass., assignors to Computervision Corporation, Burlington, Mass.

Filed May 5, 1971, Ser. No. 140,348
Int. Cl. G03b *3/00*
U.S. Cl. 95—44 R **4 Claims**



An adaptive optical focusing system which utilizes two relatively movable lenses and a servo gauging system to maintain one of the lenses at a fixed distance from a photosensitive medium. An illuminated object or light aperture is located at the focal point of the first lens. The second movable lens is positioned to intercept the collimated light rays from the first lens and to focus the image of the light aperture on the photosensitive medium. A servo gauging system maintains the second lens at a distance from the photosensitive medium which corresponds to the focal length of the second lens.

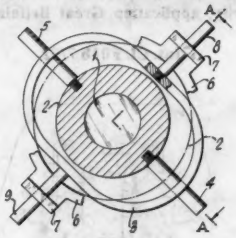
3,704,658

UNIVERSALLY ADJUSTABLE MOUNT FOR A CAMERA OBJECTIVE LENS

Kyozo Uesugi, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-shi, Japan

Filed Nov. 13, 1970, Ser. No. 89,322
Claims priority, application Japan, Nov. 27, 1969, 44/95562
Int. Cl. G03b *5/06*
U.S. Cl. 95—50 **7 Claims**

A universally adjustable mount for a camera objective lens includes an axially adjustable barrel provided with a pair of transversely spaced ears having axially aligned first bores. An elongated frame is located between the ears and is provided with oppositely directed pins slideably and rotatably engaging the ear bores and has opposed second bores therein along a



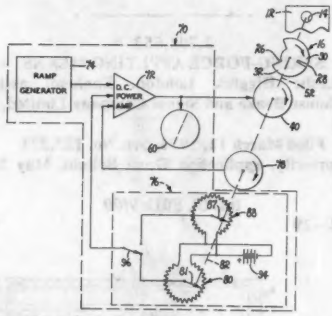
transverse axis perpendicular to the axis of the first bores. The objective lens barrel projects through the frame and is provided with opposite outwardly directed radial pins engaging the second bores. A flexible bellows interconnects the two barrels.

3,704,659

CYCLICALLY OPERABLE OPTICAL SHUTTER

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Edwin F. Dobies, 5030 Angeles Crest Highway, La Canada, Calif.

Filed Oct. 15, 1970, Ser. No. 81,096
Int. Cl. G03b *9/10*
U.S. Cl. 95—59 **8 Claims**



A cyclically operable, optical shutter particularly suited for use as a focal plane shutter, characterized by an occulting disk having a pair of radiation occulting sectors defining therebetween a pair of diametrically opposed, radiation transmitting sectors driven in rotation by a D.C. motor. A particular feature of the shutter resides in a combination of a servo-control system with the motor for accelerating the disk from a steady state of zero velocity to a preselected steady state of angular velocity, maintaining the steady state during a predetermined period of radiation transmission, and subsequently decelerating the disk to a steady state of zero velocity within a fraction of a single revolution, whereby a pulse of radiation having a preselected width is gated through an associated aperture with a high degree of uniformity and reproducibility.

3,704,660

FILM PROCESSING MACHINE

David E. Hill, 611 Perry St., Apt. 2, Davenport, Iowa

Filed Aug. 3, 1971, Ser. No. 168,636
Int. Cl. G03d *3/00*
U.S. Cl. 95—89 D **5 Claims**

A film processing apparatus having a row of film developing tanks and a plurality of wires positioned above the tanks. The

wires slidingly support a carriage over the row of developing tanks and also function as conductors to switches associated with the carriage. These switches control a motor for stopping the carriage over a successive tank and for reversing the motor

to lower the film to be developed into the tank. The starting of the motor is controlled by a tape recorder that plays back tape on which audio-frequency signals of predetermined durations at predetermined intervals have been recorded.

3,704,661

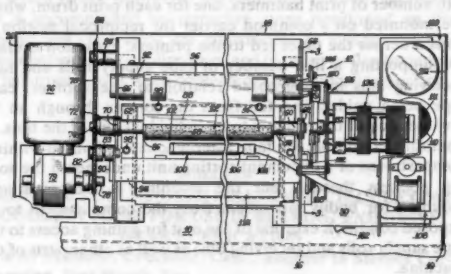
LIQUID DEVELOPING APPARATUS

Robert M. Johnson; Dennis E. Toby, and Robert M. Koch, all of Cleveland, Ohio, assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill., by said Toby and Koch

Filed April 27, 1970, Ser. No. 32,314

Int. Cl. G03d 5/06

U.S. Cl. 95—89 R **12 Claims**



Apparatus for developing diazo-sensitized copy material by the application thereto of a quantity of developer liquid includes an applicator roller to the surface of which there is supplied developer liquid, a wiper member mounted for engagement with the roller surface to wipe excess developer liquid therefrom and a pressure applying member mounted for engagement with the roller surface to form a developing zone therewith through which sensitized copy material is passed for development. Both the wiper and pressure applying members are movable into and out of engagement with the roller surface, depending upon the operating condition of the apparatus.

3,704,662

LIQUID DEVELOPING APPARATUS

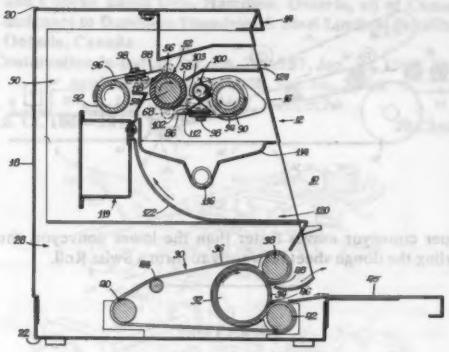
Robert M. Johnson, and Dennis E. Toby, both of Cleveland, Ohio, assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Filed April 27, 1970, Ser. No. 31,931

Int. Cl. G03d 5/06

U.S. Cl. 95—94 R **9 Claims**

Apparatus for developing diazo-sensitized copy material by the application thereto of a quantity of liquid developer includes a rotatable applicator roller to the surface of which there is supplied developer liquid, and a pair of blade members mounted adjacent the roller for engagement therewith. One of the blade members wipes excess developer liquid from the surface of the roller, and the other blade member forms a



developing zone with the roller, whereby diazo material passed therethrough is developed by the application of the developer liquid.

3,704,663

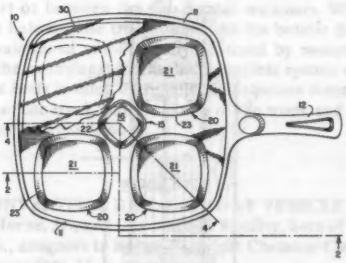
EGG COOKER

Robert W. Shull, Cincinnati, and Ronald Thompson, Shelby, both of Ohio, assignors to General Housewares Corp., Terre Haute, Ind.

Filed Feb. 16, 1971, Ser. No. 115,173

Int. Cl. A47j 37/10

U.S. Cl. 99—347 **2 Claims**



An egg cooker of the skillet type having a central water compartment for generating steam for basting and a plurality of separate cooking compartments each of fried egg size for receiving shortening and the yolk and white of an egg, and a removable cover which when in place is spaced from the open tops of the water and cooking compartments, whereby steam produced in the water compartment is directed to the upper surface of eggs in the cooking compartments, producing cooked eggs having the appearance and texture of poached eggs and the flavor of fried eggs.

3,704,664

APPARATUS FOR FORMING SWISS ROLLS

Alvert W. Fisher, Jr., Chattanooga, Tenn., assignor to McKee Baking Company, Collegedale, Tenn.

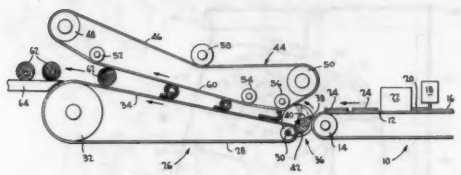
Filed Aug. 10, 1971, Ser. No. 170,429

Int. Cl. A21c 3/06

U.S. Cl. 99—450.2 **5 Claims**

Apparatus for making Swiss Rolls by feeding the coated dough sheets forwardly on a lower conveyor, tilting the rear

end of the dough sheets upwardly, and contacting the tilted rear end against a forwardly moving upper conveyor. The



upper conveyor moves faster than the lower conveyor, thus curling the dough sheet forwardly to form a Swiss Roll.

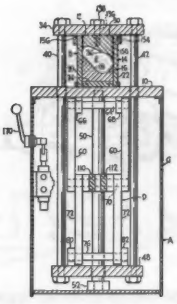
ERRATUM

For Class 99—637 see:
Patent No. 3,704,737

3,704,665
FOOD PRESS AND DIES

Louis A. Bettcher, Amherst, Ohio, assignor to Bettcher Industries, Inc., Birmingham, Ohio

Continuation-in-part of Ser. No. 878,439, Nov. 20, 1969, and a continuation-in-part of Ser. No. 67,482, Aug. 27, 1970. This application April 21, 1971, Ser. No. 135,923
Int. Cl. B30b 7/04
U.S. Cl. 100—232 **10 Claims**

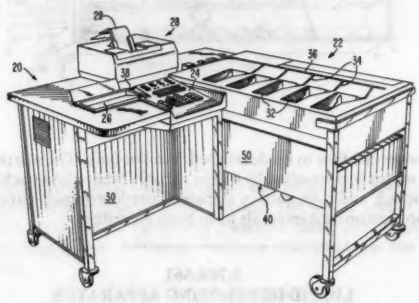


A press for shaping comestible products, such as meat and the like, in a tubular die aperture or cavity of uniform cross section by a ram, preferably made of a nontoxic or edible plastic, for example, Nylon, reciprocable in the die aperture by a cylinder and piston-type fluid actuator constructed so that no portion of the piston rod that might extend into the die aperture is retracted into the cylinder of the fluid actuator. The die aperture is formed by a channel-shaped stationary die means and a channel-shaped movable die means at least partially receivable, when the die means are closed, in the stationary die means, each die means being preferably shaped or oriented to maximize opposed forming or pressing areas. The movable die means is moved by a toggle link mechanism actuated by a cylinder and piston-type fluid actuator. Travel or movement of the movable die means into the stationary die means is limited to prevent engagement of the die means at the periphery of the die cavities therein. Clearance is provided between the die means for the escape of air entrapped in the die aperture when a product is compressed therein.

3,704,666
HIGH SPEED MULTIPLE TAPE SERIAL PRINTING MECHANISM

Harry L. Wallace, Garden City, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 3, 1971, Ser. No. 139,385
Int. Cl. B41l 19/04; B41f 1/04
U.S. Cl. 101—90 **10 Claims**

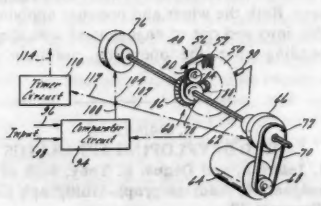


A serial-type printing mechanism and more particularly a multiple tape lister machine normally retractably housed within a unit or console forming part of a document handling system. The printing mechanism comprises a plural number of individual tape printers each containing a continuously rotatable print drum carrying print characters on its periphery and a like number of print hammers, one for each print drum, which are mounted on a common carrier for reciprocal motion in unison across the tapes fed to the printers. Provision is made for supporting a like number of tape supply rolls and tape receiving bins in superposed relation to one another, each tape being guided and fed from the former through an individual one of the printers to an individual one of the bins. In operating condition, the tape lister machine is housed within a compartment of a document sorting unit underneath the sorting pockets thereof, but the machine is reciprocatingly mounted for bodily movement from the compartment to an exposed condition external of the unit for gaining access to the tape supply rolls and receiving bins as well as other parts of the machine.

3,704,667
PRINTING UNIT

James R. Moss, Mt. Clemens, Mich., assignor to Nortron, Inc., Ann Arbor, Mich.

Continuation of Ser. No. 808,821, March 20, 1969, abandoned. This application April 14, 1971, Ser. No. 134,070
Int. Cl. B41j 7/44, 23/10
U.S. Cl. 101—93 C **17 Claims**



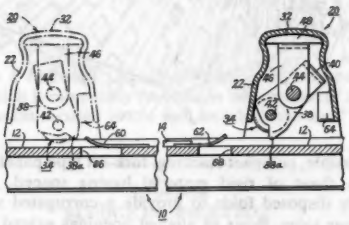
A character printing unit having an inertia driven hammer assembly, the unit which including a rotating non-circular shaft controlled by a clutch and a brake, the clutch, when energized coupling a drive motor to the shaft. The shaft is adapted to drive a high speed rotary inertia element through a gear mounted on the shaft, the inertia element driving the hammer to print a character upon braking of the shaft element.

3,704,668

DOCUMENT IMPRINTER FOR CREDIT CARDS OR THE LIKE

Ronald J. St. Onge, Stamford, and Charles I. Sherman, Norwalk, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Oct. 26, 1970, Ser. No. 83,759
Int. Cl. B41f 3/20
U.S. Cl. 101—269 4 Claims



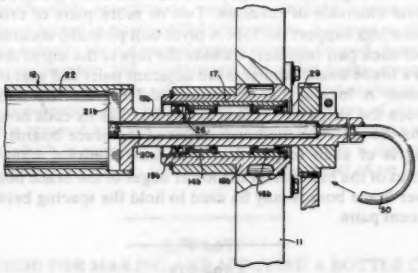
An imprinter for transferring indicia from a credit card or the like to a sales slip or similar document has a reciprocal carriage with a printing roller mounted on a rocking bail. The printing roller can thus assume a printing position when moved in one direction, and a raised non-printing position on the return stroke to prevent overprinting. The rocking of the bail is accomplished by retractive stops positioned on the printing bed. The stops are constructed to actuate the bail when contacted in one direction, and to move or flex to permit the bail to pass over when contacted in the opposite direction.

3,704,669

VIBRATING ROLLER WITH MEANS FOR CIRCULATING A COOLING FLUID FOR USE IN BEARING AND DRIVE GEAR LUBRICATION

Chris A. Christoff, Lancaster, Calif., assignor to Stevens Corporation, Fort Worth, Tex.

Filed July 15, 1970, Ser. No. 55,210
Int. Cl. B41f 13/22; B30h 15/34
U.S. Cl. 101—349 1 Claim



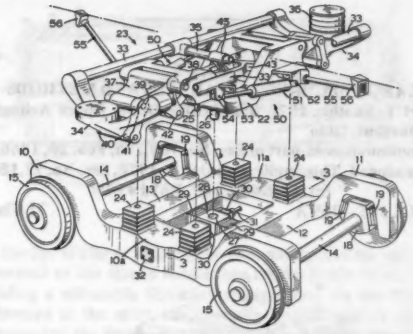
There is disclosed a unique vibrating-oscillating roller for use in a rotary press of the offset type wherein the roller has been provided with means for circulating a cooling liquid internally, and thereafter the liquid is used for bearing and drive gear lubrication.

3,704,670

STABILIZING HIGH SPEED RAILWAY TRUCKS

Richard N. Dobson, Burlington, Ontario; Kenneth E. Boyce, Hamilton, Ontario; John A. Gaiser, Stoney Creek, Ontario, and Conrad David Gris, Hamilton, Ontario, all of Canada, assignors to Dominion Foundries & Steel Limited, Hamilton, Ontario, Canada

Continuation-in-part of Ser. No. 790,757, Jan. 13, 1969. This application Jan. 14, 1970, Ser. No. 2,796
Int. Cl. B61f 3/08, 5/20, 5/24
U.S. Cl. 105—201 20 Claims



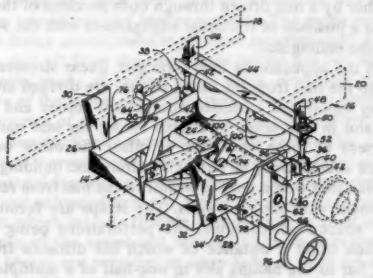
A railway vehicle has a bolster interposed between the truck and the car body, the bolster comprising upper and lower parts. The upper bolster part mounts the vehicle body for vertical springing movement only; an articulated linkage alternatively connects the two bolster parts or the truck frame and the lower bolster part for lateral arcuate movement about a longitudinal tilting axis under the action of motors; means permitting pivoting of the body on the truck is provided alternatively respectively between the truck frame and the lower bolster part or between the two bolster members. When the pivoting is between the truck frame and the bolster the truck pivot is maintained automatically centered by motor means opposing the centrifugal forces. In a complete system wherein the vehicle body is tilted automatically detectors measure the curvature of the track and the tilting of the truck and control the tilting of the vehicle body.

3,704,671

CONVERTIBLE RAIL-HIGHWAY VEHICLE

Victor A. Horne, Jr., and Lawrence D. Bradley, both of Kansas City, Mo., assignors to Horne-Boatright Chemical Company, Inc., Kansas City, Mo.

Filed Oct. 7, 1970, Ser. No. 78,813
Int. Cl. B61d 15/00; B61f 9/00; B62d 62/12
U.S. Cl. 105—215 C 12 Claims



An attachment for a highway vehicle to support the vehicle on rails. The support includes front and rear rectangular sub-

frames pivoted beneath the vehicle frame for swinging about respective horizontal axes adjacent the leading ends of the sub-frames and extending transversely of the vehicle. A pair of rail wheel and axle assemblies for each sub-frame are swingable by a fluid piston and cylinder assembly to and from vehicle supporting positions. The end of each sub-frame remote from the corresponding horizontal axis is coupled to the vehicle frame by lost motion linkage and a pair of pneumatic bags are interposed between each sub-frame and the vehicle frame to cushion the vehicle when supported on the rail by the rail wheels.

3,704,672

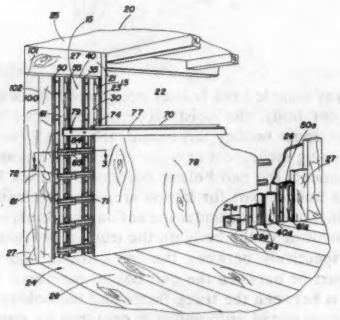
CARGO SECURING APPARATUS AND METHODS

Albert T. Santho, 1920 Brandywine Drive, Upper Arlington, Columbus, Ohio

Continuation-in-part of Ser. No. 708,196, Feb. 26, 1968, abandoned. This application Oct. 1, 1970, Ser. No. 77,180

Int. Cl. B60p *7/08;* **B61d** *45/00*

U.S. Cl. 105—369 A **21 Claims**



An apparatus for removably securing a cargo barrier across a doorway in a freight car, or alternatively as a bulkhead from side to side of a freight car, which can most easily and cleanly be removed to open the doorway or bulkhead in order to remove the contents of the freight car. Such apparatus comprises one or more connecting straps connected (as hereinafter defined) to the cargo barrier; an anchor bar secured to the freight car structure about which the strap or straps are looped and/or cinched, and a nailable member such as a wooden post or a metal member formed with a nail retaining slot near to the anchor bar and on the side of said anchor bar toward the doorway or the center of the bulkhead. Adjacent opposite portions of the cinching loop are secured to each other by a nail driven through both portions of the strap and into a position of frictional engagement with the wooden post or the nailing slot.

When the apparatus is thus arranged, linear stresses transmitted to the nail from the cargo barrier are divided into substantially equal and opposite component forces and act in shear (and in one sense in double shear) on said nail; each component of force operating to offset the other so as to eliminate substantially all damaging strain and bending forces on the nail that would tend to withdraw the nail from retentive engagement with the slot walls. The straps are formed with equally spaced perforations, the perforations being spaced from each other a distance of which the distance from the anchor bar to the nailing slot in one-half of a multiple. Also, the distance between the anchor bars on each side of the doorway is a multiple of the uniform distance between said perforations. Also, the distances between the nailing slots are multiples of the uniform distance between said perforations.

3,704,673

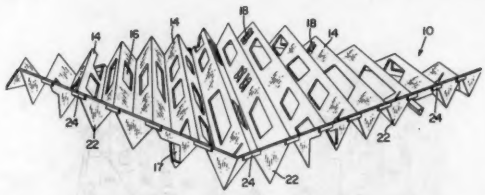
LIGHT WEIGHT PALLET CONSTRUCTION

Joseph A. Drelicharz, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 20, 1971, Ser. No. 107,922

Int. Cl. B65d *19/04*

U.S. Cl. 108—53 **4 Claims**



A reversible, compact stacking, fork-lift type pallet consisting of a sheet of rigid material having spaced, parallel, diagonally disposed folds to provide a corrugated structure having four sides. Rows of aligned openings extend through adjacent folds to receive the usual spaced tines of a fork-lift truck from multiple directions. In manufacture a single sheet of material in the shape of a rhomboid parallelogram is perforated and then folded to the required corrugated shape.

3,704,674

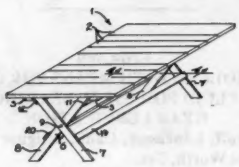
FOLD-UP FLAT TOPPED SUPPORTS

Charles J. Johnson, 650 19th Avenue, Lewiston, Idaho

Filed Oct. 4, 1971, Ser. No. 186,189

Int. Cl. A47b *3/02*

U.S. Cl. 108—118 **3 Claims**



A flat topped support useable as a table and as a seat is made of lumber. A top is made of a plurality of short boards side-by-side and two spaced apart wood strips which extend across the undersides of the boards and is secured to all of them. The edges of the strips that face each other are undercut to form channels or recesses. Two or more pairs of crossed wooden legs support the top. A pivot bolt pivotally secures the legs of each pair together. Outside the legs at the top of the leg pairs a brace board connects the adjacent pairs and seat in the recesses. A locking bar is suspended from the top midway between the strips by a coiled spring and has its ends notched to provide seats for the lower edges of the brace boards. The spring is of such length that it is under tension when the notches of the bar seat on the lower edges of the brace boards. Lower brace boards may be used to hold the spacing between adjacent pairs.

3,704,675

CANTILEVER SHELF ASSEMBLY

Gerald J. Bellasalma, West Caldwell, N.J., assignor to Plastetics, Inc., Fairfield, N.J.

Filed Jan. 15, 1971, Ser. No. 106,663

Int. Cl. A47b *5/00*

U.S. Cl. 108—152 **4 Claims**

An improved cantilever shelf assembly for mounting on a wall or the like in which the shelf body comprises a reinforcing

plate embedded in molded synthetic resin having locking portions extending through openings in the plate and in which the

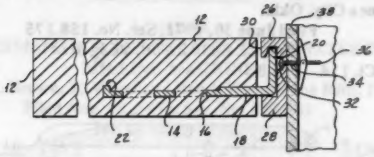


plate has a rearward extension formed with an upstanding flange which is removably received in the channel of an elongated bracket secured to the wall on which the shelf is to be mounted.

3,704,676

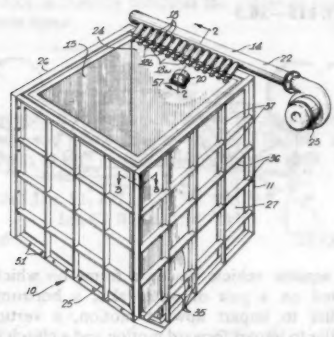
SLUDGE INCINERATOR

Walter J. Davies; Barry Hatton, both of Calgary, Alberta; George C. Boyd, Edmonton, Alberta, and Harvey E. W. Hanlan, Bremner, Alberta, all of Canada, assignors to Kanting Oilfield Services Ltd., Calgary, Alberta, Canada

Filed Sept. 13, 1971, Ser. No. 179,742

Int. Cl. F23g *5/00*

U.S. Cl. 110—8 R **15 Claims**



Method and apparatus for disposing of unwanted fluids having combustible constituents, such as petroleum wastes commonly collected in pits in oilfield operations. A screen or sheet of high velocity air is directed across an open-topped chamber of an incinerator, the air forming the sheet being directed downwardly at an angle relative to the horizontal so that it enters a combustion zone beneath the sheet. A mixture of air and waste is sprayed into the combustion zone from the same side as air which is supplied to form the sheet and in a direction substantially parallel to the direction of the travel of air in the sheet.

3,704,677

METHOD FOR MAKING AND APPLYING A BOTTLE CAP

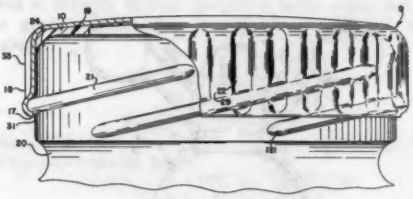
Jens L. Moller, Westmont, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 785,003, Nov. 26, 1968. This application Dec. 18, 1969, Ser. No. 888,116

Int. Cl. B21d *51/00*

U.S. Cl. 113—121 A **4 Claims**

The subject is a bottle cap of the type which is first pushed on, but thereafter may be twisted off and on. A shell is made from a cupped blank having a substantially straight skirt. The skirt is then knurled or fluted, the inside root diameter of the flutes being a close sliding fit on the crests of the bottle finish threads to which the cap is to be applied. When knurling, the rim of the skirt is curled inward slightly to an inside diameter about the same as the inner root diameter of the flutes. After inserting a suitable seal ring or disc, the shell is pushed down over the threaded finish of the bottle into sealing engagement



with the lip. While so holding the cap, portions of the skirt are conformed to the thread formations on the bottle finish, thus providing a releasable threaded engagement. As the threads are formed in the skirt, the inwardly turned edge is closely conformed to the finish, in which position the edge is shielded against accidental contact by the fingers, when unscrewing the cap to open the bottle.

3,704,678

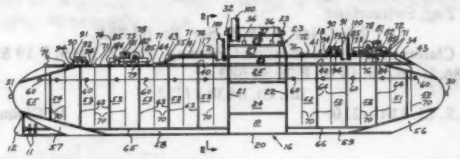
SUBMARINE TANKER

Walter A. Kelly, 40-1st Brighton Road, Brooklyn, N.Y.

Filed April 26, 1971, Ser. No. 137,503

Int. Cl. B63g *8/00*; **B63b** *25/08*

U.S. Cl. 114—16 R **10 Claims**



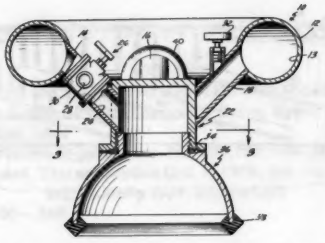
A submarine tanker for petroleum products having a substantially rigid T-shaped frame in longitudinal vertical section and constituted of an inner cylindrical operative center carrying the bridge and crew deck quarters extending fore and aft from the operations and bridge sections. The parts constituting such frame are enclosed in pressure resistant steel. Extending fore and aft from the operations center are two series of cargo tanks made of ordinary ship plate. Enclosing the bow and stern of the vessel are ballast tanks. The lower portions of the two series of cargo tanks are also formed to provide two bottom, longitudinally extending ballast tanks. The exterior portions of the vessel may also be enclosed in a layer or layers of a material known as "tough glass." The cargo tanks are loaded and unloaded from the top of the vessel by a system of conduits which include flexible hose wound on reels secured to the top of the vessel and secured to floats provided with pumps. Means are provided to open holes in pack ice overlying the vessel to permit the aforesaid floats to rise to the surface of the sea. Escape bells are carried by the vessel in the event that the vessel must be abandoned and such bells are capable of functioning to affect this result even when the vessel is submerged under an ice pack.

3,704,679

UNDERWATER CONNECTING DEVICE

Harvey H. Haynes, 1748 Dewayne Ave., Camarillo, Calif.; Lawrence F. Kahn, 915 Sea Horse Court, Ventura, Calif., and Rodger A. Hoofnagle, P.O. Box 51921, Lafayette, La.

Filed Nov. 5, 1970, Ser. No. 87,040
Int. Cl. B63c 7/00
U.S. Cl. 114—51 **5 Claims**



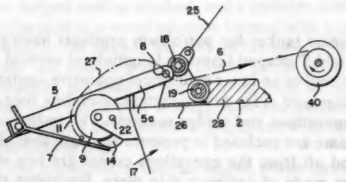
A unitary device for making connection to an underwater object to facilitate lifting or moving the latter. The assembly includes a suction cup selectively communicating with a reservoir of air at or below atmospheric pressure (or a pressure less than ambient pressure), and valve means for interconnecting these components after the cup has been placed on the object to be moved, thereby lowering the pressure within the cup and causing the latter to firmly grip the object. The invention device is entirely self-contained and requires no external equipment for its operation.

3,704,680

MOUNTING FOR SHIP'S ANCHOR

Edmund Uher, Zug, Switzerland, assignor to Uher Patent AG, Zug, Switzerland

Filed Nov. 9, 1970, Ser. No. 87,881
Claims priority, application Germany, Nov. 7, 1969, P 19 55 986.5; Aug. 6, 1970, P 20 39 083.4
Int. Cl. B63b 21/22
U.S. Cl. 114—210 **10 Claims**



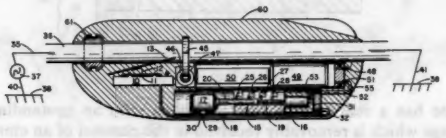
A ship's anchor, suspended from a cable or chain which passes around a guide roller at the bow of a ship, is provided near the top of its shank with a short transverse bar, parallel to the plane of its flukes, coming to rest on two large-diameter cheeks of the guide roller when the anchor is hoisted. Additional bearing elements for the anchor shank may be provided on deck, inwardly of the guide roller, to afford three-point support for the hoisted anchor; one of these elements, engaging the free end of the retracted shank, may be spring-loaded to thrust the anchor overboard when the chain or cable is slackened.

3,704,681

VARIABLE DEPTH, REMOTELY SELECTIVE SEISMIC CABLE DEPTH CONTROLLER

Hollis O. Campbell; John W. Fetrow, and Kim L. Mitchell, all of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed June 30, 1971, Ser. No. 158,175
Int. Cl. B63b 21/00; B63g 8/14
U.S. Cl. 114—235 B **4 Claims**



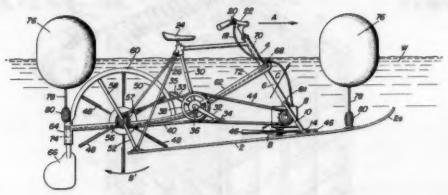
A remotely selective cable depth controller comprising a movable air piston positioned by an electrical motor, said position controlling the volume of the air enclosure which determines the depth of the controller. The motor is driven by a solid state amplifier of low stand-by power consumption and is operated by command signals which activate a tuned reed switch in combination with a series of memory switches.

3,704,682

PEDAL OPERATED WATER SPORT VEHICLE

Francesco Piccitto, 55 Home Street, Somerset, N.J.

Filed June 7, 1971, Ser. No. 150,699
Int. Cl. B63h 16/12
U.S. Cl. 115—26.3 **2 Claims**



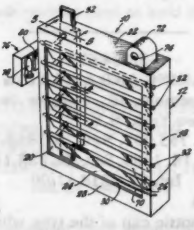
An aquatic vehicle having a frame on which a rider sits mounted on a pair of water skis, a horizontally rotating propeller to impart upward motion, a vertically rotating propeller to impart forward motion and a clutch mechanism to disengage the horizontally rotating propeller after the combined propeller motions have caused the skis to begin planing on the water surface.

3,704,683

VISUAL COMMUNICATION APPARATUS

E. John Summersby, 4580 W. 170th St., Lawndale, Calif.

Filed Sept. 14, 1970, Ser. No. 71,674
Int. Cl. G08b 9/00
U.S. Cl. 116—20 **7 Claims**



A visual communication apparatus of primarily synthetic resin material and including a plurality of pivotable mirrored

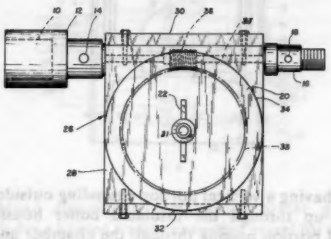
surfaces operated by a single actuator to cause the mirrored surfaces to pivot from a usual misaligned position to an aligned position whereby light may be reflected. A spring biases the mirrored surfaces to the misaligned position. A light source and a sight may be included as convenient accessories.

3,704,684

ATTACHMENT FOR MEASURING COORDINATES IN A MILLING MACHINE

Burton D. Brown, 23 Woodland Road, Wyomissing Hills, Pa.

Filed Aug. 18, 1971, Ser. No. 172,681
Int. Cl. B23q *17/00*
U.S. Cl. 116—115.5 **2 Claims**



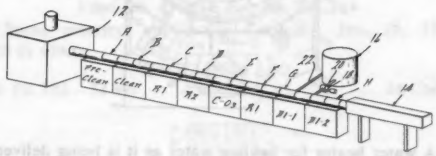
This invention relates to an attachment which can be secured to a milling machine for measuring X–Y coordinates by removing the handle which is connected to a coordinate screw and attaching the handle on the other end of the attachment. Thus as the handle at its new location is rotated, it will not only drive the coordinate screw but will also drive a scale wheel which accurately indicates the extent of rotation of the coordinate screw.

3,704,685

PROCESSING APPARATUS

John W. Neumann, Birmingham; Chester G. Clark, Grosse Pointe Woods, and Louis J. Minbiole, Jr., Detroit, all of Mich., assignors to Oxy Metal Finishing Corporation, Warren, Mich.

Filed Jan. 11, 1971, Ser. No. 105,368
Int. Cl. B05c *11/00*
U.S. Cl. 118—6 **15 Claims**



An apparatus and method for processing elongated cup-shaped workpieces through one or a plurality of modular processing units, each of which incorporates a plurality of fluid streams oriented to impinge against the surfaces of the workpieces, thereby effecting a conveyance of the workpieces through the apparatus and a concurrent treatment of the interior and exterior surfaces thereof.

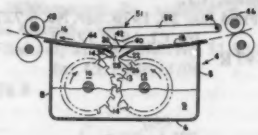
3,704,686

TONER PUMP

Ernst Schrempp, Norwalk, and Christian A. Beck, Ridgefield, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed May 11, 1971, Ser. No. 142,295
Int. Cl. B05c *3/12*
U.S. Cl. 118—429 **11 Claims**

A controlled standing wave of developer is formed above a pair of spaced baffle plates by a pair of axially elongated counter-rotating gears supported below the baffle plates in a tank of developer. An evaporation sealer is pivotably positioned to sealably fit over the pair of baffle plates when the spur gears stop rotating to prevent evaporation of the developer.

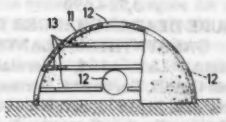


3,704,687

FISH FARMING NEST

Ryotaro Nohmura, No. 19-19, 3-chome, Senriyama Nishi, Suita-shi, Osaka-fu, Japan

Filed Dec. 21, 1970, Ser. No. 99,808
Int. Cl. A01k *61/00*
U.S. Cl. 119—3 **3 Claims**



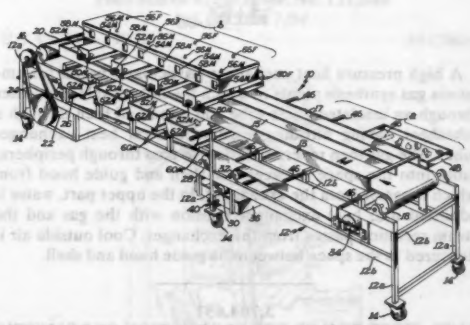
An artificial fish farming nest. The nest is formed in the shape of a dome and has a plurality of holes through the wall of said dome. The dome is submerged so that its edge is placed on the bottom of the sea, thereby giving buoyancy to the fish farming nest itself and thus preventing it from being buried in the bottom of the sea within a short space of time.

3,704,688

METHOD AND APPARATUS FOR HANDLING FOWL

Jerry M. Wilson, Jasper, Ala., assignor to The Pillsbury Company, Minneapolis, Minn.

Filed July 27, 1970, Ser. No. 58,240
Int. Cl. A01k *45/00*
U.S. Cl. 119—22 **6 Claims**



Newly hatched baby chicks are sexed and simultaneously transferred from a hatchery tray at a first station to either the male or the female channel of a conveyor which transfers them to counting and debeaking devices located at a second station. The baby chicks are picked up at the second station, debeaked and simultaneously counted, e.g., by touching a counter with the hand as the chicks are being debeaked. They are then placed in boxes.

3,704,689

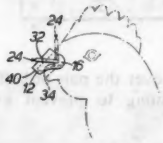
DEFLECTABLE POULTRY BEAK APPLIANCE

Milton G. Harwood, and Louis J. Harwood, both of P.O. Box 38, Farmingdale, N.J.

Filed Jan. 29, 1970, Ser. No. 6,727

Int. Cl. A01k 37/00

U.S. Cl. 119—97 R 7 Claims



A poultry beak appliance, such as a shield or blinder made of semi-rigid plastic material having extensions on both sides of the poultry beak for securing the appliance to the beak, said extensions provided with readily flexed end-portions for enabling the extensions to be deflected to release the head of the poultry when accidentally caught in a wire screen.

3,704,690

HIGH PRESSURE HEAT EXCHANGER FOR AMMONIA GAS SYNTHESIS PLANTS

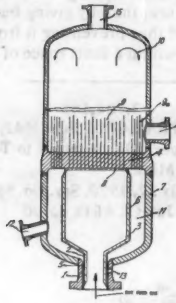
Paul Mevenkamp, Lichtendorf, Germany, assignor to Friedrich Uhde GmbH, Dortmund, Germany

Filed Jan. 21, 1971, Ser. No. 108,512

Claims priority, application Germany, Feb. 19, 1970, P 20 07 528.9

Int. Cl. F28f 9/02; F22b 1/15

U.S. Cl. 122—7 R 2 Claims



A high pressure heat exchanger particularly useful for ammonia gas synthesis plants in which the hot recycle gas passes through an insulated guide tube and hood and then through a tubesheet having nitriding-resistant central heat exchanger tubes. The gas then reverses its flow to pass through peripheral tubes into the space between the shell and guide hood from which it passes from the exchanger. In the upper part, water is admitted into heat exchanger relation with the gas and the steam resulting passes from the exchanger. Cool outside air is delivered to the space between the guide hood and shell.

3,704,691

FUEL-FIRED BOILER FOR PRODUCTION OF DOMESTIC HOT WATER AND FOR HEATING

Willi Brandl, Schurbungert 12, 8057 Zurich, Switzerland

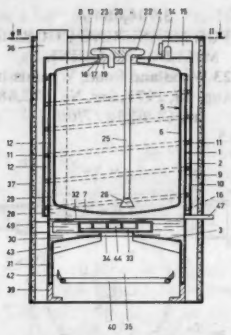
Filed Jan. 25, 1971, Ser. No. 109,300

Claims priority, application Switzerland, March 25, 1970, 4560/70

Int. Cl. F22b 33/02

U.S. Cl. 122—33 10 Claims

A boiler has in inner cylindrical vessel through which water is passed for use as a domestic hot water. Surrounding this vessel is a heating chamber containing water and having a downwardly open cup-shaped portion receiving a burner having substantially tangentially directed fuel-expelling orifices. Surrounding the heating chamber is a cylindrical compartment subdivided by a helical member into a helical flow path for the water circulated through a heating system. A flue is



provided having a vertical portion extending outside the compartment up through the insulated boiler housing and a horizontal portion passing through the chamber and opening centrally above the burner in the cup shaped lower portion of the chamber. This flue is provided with heat-absorbing ribs, as is the cup-shaped chamber portion, to pick up heat from the burner.

3,704,692

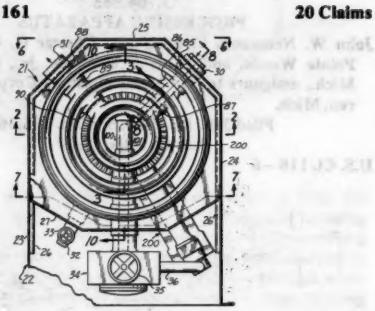
WATER HEATER

Robert L. Hughes, and John E. Rouse, both of West Covina, Calif., assignors to Vaskov Industries, Inc., Glendora, Calif.

Filed May 17, 1971, Ser. No. 143,899

Int. Cl. F22b 7/00

U.S. Cl. 122—161 20 Claims



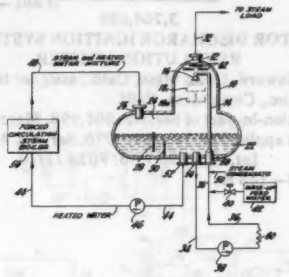
A water heater for heating water as it is being delivered, commonly called an "instantaneous water heater". The heater includes a plurality of concentric tanks which are at least partially axially overlapping and which are spaced from one another to pass hot gases in heat transfer relationship with their sidewalls. The sidewalls of the tanks are generally cylindrical. The tanks are interconnected so as to permit the flow of water to and from each of them. An inlet manifold discharges into each tank, preferably along an axis which is skew to the central axis whereby to give the water, as it flows through the tank, both a circumferential and an axial component, thus aiding in keeping the tank clean and preventing thermal "stacking" of the water. the tanks are preferably formed from concentric half-shells which are welded together at their end seams, and which have telescopic necks projecting from their sidewalls that are welded together to form a structural joinder and a fluid interconnection. A burner is placed beneath the group of tanks with deflector jets which aid in confining the rising products of combustion to a relatively narrow cross-section, so as to inject a maximum BTU input into a relatively small heater cross-section.

3,704,693

COMBINED STEAM AND HIGH TEMPERATURE WATER GENERATING SYSTEM

Erwin Hansen, New York, N.Y., assignor to The International Boiler Works Co., East Stroudsburg, Pa.

Filed Jan. 14, 1971, Ser. No. 106,472
Int. Cl. F22d 7/00
U.S. Cl. 122—406 R 9 Claims



A combined steam-high temperature water generating system includes a heated water generating vessel for delivering both steam and high temperature water to delivery circuits therefor. A portion of the heated water is continuously supplied to one or several forced circulation steam boilers which evaporate part, and only part of the throughput water flow. The return flow from the boiler or boilers to the vessel thus comprises a steam-high temperature water mixture.

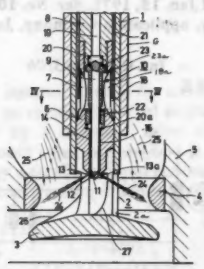
The system accommodates varying relative consumption demands for steam vis.-a-vis. high temperature water. Also, a chemical balance is maintained between the steam and heated water subsystem components by reason of the continuous water recirculation between the boiler or boilers and vessel. Further, the multifunctional use of the common heated water generating vessel renders the system amenable to ready fabrication.

3,704,694

INTERNAL COMBUSTION ENGINE WITH AN AIR INLET VALVE AND A FUEL INJECTION VALVE

Heinz Gilewski, and Jurgen Wolf, both of Wolfsburg, Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Jan. 6, 1971, Ser. No. 104,319
Claims priority, application Germany, Jan. 15, 1970, P 20 01 626.6
Int. Cl. F02b 3/00
U.S. Cl. 123—32 VN 16 Claims



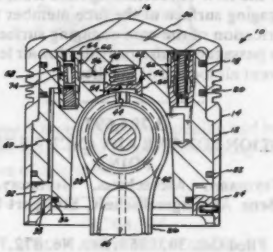
An air inlet valve and a fuel injection valve cooperate with a common combustion chamber of an internal combustion engine cylinder to supply a mixture of air and fuel thereinto in properly timed relation. The air inlet valve comprises a valve body covering with a valve seat for controlling inlet of air into the combustion chamber and having a hollow valve stem, the fuel injection valve being disposed for operative movement in said stem to inject fuel into the combustion chamber when the inlet valve is opened.

3,704,695

VALVE CONSTRUCTION FOR VARIABLE COMPRESSION RATIO PISTON

Val Cronstedt, Williamsport, Pa., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed July 2, 1970, Ser. No. 51,934
Int. Cl. F02b 75/04
U.S. Cl. 123—78 B 1 Claim



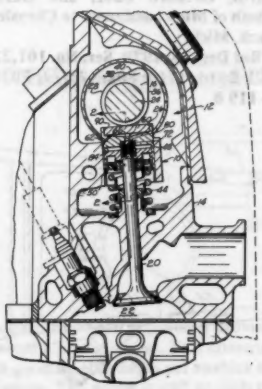
A two-part variable compression ratio piston provided with an upper and lower chamber, supply valve means connected with the lubrication system of the engine for supplying oil to the chambers in a manner which permits the parts, by inertia forces and the forces generated by combustion chamber pressures, to move relative to each other at a controlled rate to increase the compression ratio of the engine until a predetermined constant maximum combustion chamber pressure has been achieved, a discharge valve assembly for discharging some of the oil from the upper chamber to the engine crankcase when the pressure in the upper chamber exceeds a predetermined maximum value and a restricted discharge orifice connected to the lower chamber for discharging a controlled quantity of oil therefrom. The supply valve and discharge valve assembly are each preferably formed with a conically shaped exterior surface that mates with a similarly shaped hole within the inner piston member for retaining the valves therein. The supply valve is formed with a separate seat spool which is inserted into a bore formed through the supply valve body and welded in place.

3,704,696

HYDRAULIC VALVE LIFTER

Roy F. Abell, Jr., Saginaw, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed March 8, 1971, Ser. No. 121,648
Int. Cl. F01l 1/04
U.S. Cl. 123—90.33 10 Claims



A hydraulic valve lifter for use in a direct acting overhead camshaft valve gear of an internal combustion engine includes

a body member, a plunger member located at least partially within the body member, and a face member located at least partially within the body member and having a cam engageable surface thereon. A fluid reservoir is located between the face member and the body member and a pressure chamber is disposed between the plunger member and the body member for taking up lash in the valve gear. A leakage passageway is provided between the face member and the body member and provides for the flow of lubricating fluid from the reservoir to the cam engaging surface of the face member to thereby provide for lubrication of the cam engaging surface and the cam. The leakage passageway also provides for air leakage from the lifter to prevent air lockup of the lifter.

3,704,697

INSTALLATION FOR THE ADVANCE OF THE IGNITION POINT

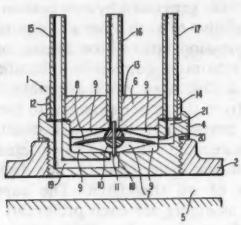
Werner Weymann, Aichschiess, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Oct. 30, 1969, Ser. No. 872,713

Claims priority, application Germany, Oct. 30, 1968, P 18 06 000.9

Int. Cl. F02p 5/04; F02n 17/00

U.S. Cl. 123—117 A **24 Claims**



An installation for advancing the ignition instant in internal combustion engines, in which the control actuator for the ignition-distributor normally controlled by the suction pipe vacuum and itself controlling the ignition distributor, for the purpose of advancing the ignition point during the drive of the vehicle with a cold engine, can be selectively connected with a vacuum reservoir or tank with is present in the vehicle.

3,704,698

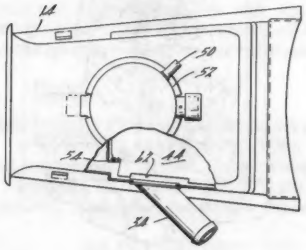
NOTCHED DOOR VALVE FOR CONTROL OF CARBURETOR AIR AND CRANKCASE VAPORS

Jorma O. Sarto, Orchard Lake, and Gary D. Dawson, Rochester, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 24, 1970, Ser. No. 101,228

Int. Cl. B01d 39/10; F02m 23/14; F02f 9/02

U.S. Cl. 123—119 B **5 Claims**



An air cleaner snorkel having an inlet for heated air in addition to the usual ambient air inlet at its open end and also including an inlet for vapors from the crankcase. A door-like valve controls the flow of ambient and heated air through the snorkel into the air cleaner. The door is notched to assure the presence of at least a small amount of ambient air flow through the snorkel when the door is closed or partially so with respect to the ambient air inlet thereby directing vapors from the crankcase into the air cleaner and preventing their escape out of the ambient air inlet to the atmosphere.

3,704,699

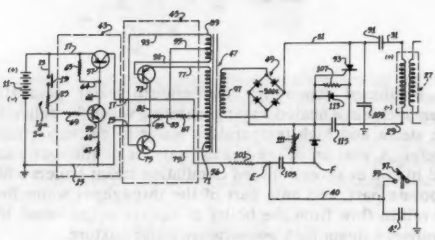
CAPACITOR DISCHARGE IGNITION SYSTEM WITH REVOLUTION LIMITER

Homer E. Howard, Costa Mesa, Calif., assignor to Howard Associates, Inc., Costa Mesa, Calif.

Continuation-in-part of Ser. No. 806,998, March 13, 1969. This application June 24, 1970, Ser. No. 49,262

Int. Cl. F02p 3/06; F02d 11/10

U.S. Cl. 123—148 E **3 Claims**



A capacitor discharge ignition system coupled to a source of electrical energy for discharging pulses of electrical energy into the transformer of a vehicle ignition system at a rate variable with engine speed. The capacitor discharge ignition system includes a revolution limiter which is responsive to the engine exceeding a predetermined speed for reducing the rate at which pulses of electrical energy are discharged into the transformer by the capacitor discharge system. With a reduced number of pulses being supplied to the transformer, the engine is rendered substantially incapable of exceeding the preselected speed.

3,704,700

IGNITION ARRANGEMENT FOR INTERNAL COMBUSTION ENGINES HAVING AN ALTERNATING CURRENT GENERATOR

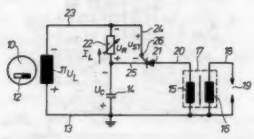
Jurgen Wesemeyer, Stuttgart-Vaihingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 15, 1971, Ser. No. 106,674

Claims priority, application Germany, Jan. 20, 1970, P 20 02 310.3

Int. Cl. F02p 3/06

U.S. Cl. 123—148 E **16 Claims**

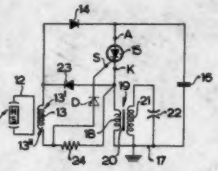


Shunted across the charging winding of the alternating current generator is an impedance and a spark discharge capacitor connected in series. A thyristor is connected to permit discharge of the capacitor through the primary winding of the spark core when the thyristor is conductive, the control electrode of the latter being connected to the impedance so that the triggering voltage is the voltage drop across the impedance.

3,704,701
IGNITION ARRANGEMENTS FOR INTERNAL COMBUSTION ENGINES

Gunter Struber, Fleischmannstr. 40, and Peter Schmaldienst, Diehlstr. 1, both of 85 Nuernberg, Germany

Filed Dec. 21, 1970, Ser. No. 100,079
Claims priority, application Germany, Dec. 19, 1969, P 19 63 671.6
Int. Cl. F02p *3/06*
U.S. Cl. 123—148 E 10 Claims

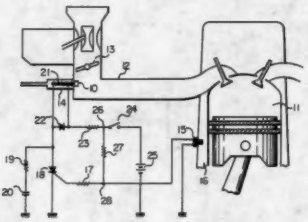


The alternating current from the engine magneto charges the ignition capacitor on one half-wave and triggers the thyristor to discharge the capacitor on the next half-wave. The discharge current induces in the secondary of the spark coil a high voltage pulse that causes the spark plug to arc.

3,704,702
START-UP FUEL INJECTION SYSTEM

Shigeo Aono, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 19, 1970, Ser. No. 81,873
Claims priority, application Japan, Oct. 22, 1969, 44/84432
Int. Cl. F02n *17/00*
U.S. Cl. 123—179 G 3 Claims



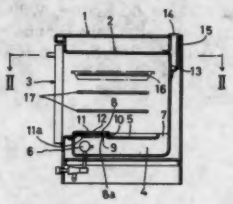
A start-up fuel injection system for an internal combustion engine providing an enriched air-fuel mixture during start-up and warming-up by a solenoid valve controlled injector system. The solenoid valve is energized in dependence on a signal produced by a combination of actions of a thyristor and a thermistor or a combination of similar basic elements.

3,704,703
COOKING OVEN

Tadayoshi Takase, Nishikamo-gun, and Sueo Mizuno, Higashikasugai-gun, both of Japan, assignors to Kabushiki Kaisha Rinnai Seisakusho, Nogoya-shi, Japan

Filed March 29, 1971, Ser. No. 128,849
Claims priority, application Japan, Oct. 5, 1970, 45/98156
Int. Cl. F24c *3/00*
U.S. Cl. 126—39 C 5 Claims

An oven has a heating chamber with a front door providing access thereto and beneath a separating plate at the bottom of the heating chamber is a burner chamber containing a burner. The separating plate has an opening above the burner and a

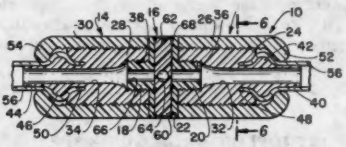


detachable cover is mounted at the opening and has a window of heat-resistant plate glass to permit viewing of the burner and its condition of operation.

3,704,704
BIRTH CONTROL VALVE

Ramon L. Gonzales, 6242 Willow Crest Avenue, Apt. No. A, North Hollywood, Calif.

Filed Oct. 12, 1970, Ser. No. 79,738
Int. Cl. A61b *19/00*
U.S. Cl. 128—1 R 9 Claims

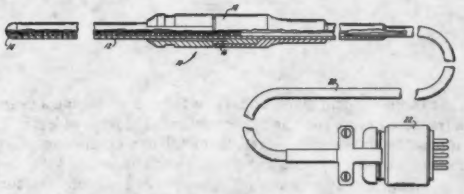


In combination with a tube within a mammal which when opened is necessary to effect reproduction and when closed effects sterilization, a valve to be located within the tube which can be selectively opened and closed.

3,704,705
PROBE FOR ELECTRONIC MEDICAL DEVICE

Edgar O. Eckhart, Livingston, N.J., assignor to Becton Dickinson & Company, East Rutherford, N.J.

Filed Dec. 9, 1970, Ser. No. 96,413
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 H 4 Claims

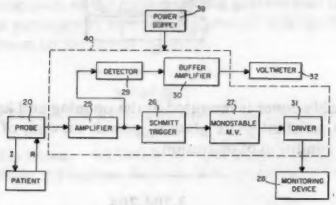


A flexible electronic medical probe is provided incorporating a spring inside a plastic sleeve. This construction provides the probe with good axial strength yet enables it to bend easily under lateral stress. The probe is stiff enough to enter a body orifice or affix a cot but will collapse before the force transmitted through the probe reaches the point where the probe tip can cause trauma to a patient.

3,704,706
HEART RATE AND RESPIRATORY MONITOR

Bonita Falkner Herczfeld; Peter R. Herczfeld, both of Philadelphia, Pa., and Richard D. Klafter, Willingboro, N.J., assignors to Drexel University, Philadelphia, Pa.

Filed Oct. 23, 1969, Ser. No. 868,823
Int. Cl. A61b 5/02
U.S. Cl. 128—2 R 2 Claims

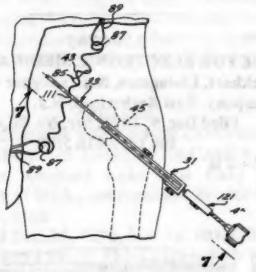


Apparatus for detection of pulse repetition rate and oxygenation of blood flow, comprising a solid state probe having a narrow bandwidth light source housed to direct light upon a patient's finger and a photodetector housed for receiving reflected light from such finger, the output of the detector being connected to electronic circuitry for detecting pulse repetition rate of blood flow and for detecting signal level representative of the degree of oxygenation of the patient's blood. The use of a low power narrow bandwidth light source with a red emission characteristic permits precise detection of the degree of oxygenation of the blood.

3,704,707
ORTHOPEDIC DRILL GUIDE APPARATUS

William X. Halloran, 440 Fair Drive, Costa Mesa, Calif.

Filed April 6, 1971, Ser. No. 131,645
Int. Cl. A61f 5/04
U.S. Cl. 128—92 EB 14 Claims

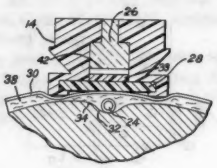


Orthopedic drill guide apparatus for use in drilling a bore in a fractured bone such as a trochanter for receipt of a pin. The apparatus includes a portable pistol device having aiming means mounted on the top thereof for alignment with an X-ray image-producing target placed over such fractured trochanter. Drill guide means is mounted on the pistol device below the aiming means and transverse indicator means is provided on such pistol device. Thus, the target may be placed over the fractured trochanter, an X-ray taken thereof and such X-ray examined to determine the point on such target which aligns with the desired orientation for the bore to be drilled. The aiming means is then aimed at the selected point on the target and the pistol device maneuvered to align the drill means below the aiming means as indicated by the indicator means so the drill may be inserted in such guide means for drilling the bore in the trochanter at the desired location.

3,704,708
BLOOD PRESSURE MEASURING MECHANISM

Arthur S. Iberall, Radnor, Pa., assignor to General Technical Services, Inc.

Continuation-in-part of Ser. No. 658,487, Aug. 4, 1967, abandoned. This application May 4, 1970, Ser. No. 34,341
Int. Cl. A61b 5/02
U.S. Cl. 128—205 E 2 Claims



An apparatus for observing and measuring the complete range of arterial blood pressures. A small casing is provided having a cavity. The cavity is sealed at one end by a flexible membrane and at the other by a pressure responsive transducer. The casing has a ridge portion for positioning over an arterial duct complimentary to the duct. As pressure changes in the duct, the voltage output of the transducer varies representative of the duct pressure.

3,704,709
DISPOSABLE BODY DRAINAGE RECEIVER

James L. Sorenson; Gordon S. Reynolds, and Karl A. Pannier, Jr., all of Salt Lake City, Utah, assignors to LeVoy's, Inc., Salt Lake City, Utah

Filed Sept. 9, 1970, Ser. No. 70,755
Int. Cl. A61m 1/00
U.S. Cl. 128—277 5 Claims

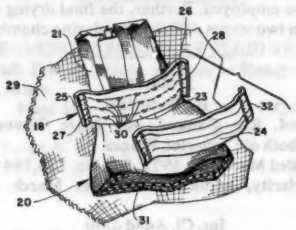
A body drainage receiver in the form of a disposable liner for a canister to receive drainage from the body of a patient, where drainage is indicated as the result of severe wounding, surgery performed, or other reasons, the liner being disposable either with or without its accumulated drainage after a single usage, the canister and cover therefor being reusable with a new liner, the cover of the canister being connected to a vacuum or suction system to stimulate drainage from the patient.

3,704,710

SANITARY PAD HOLDER

Eugene Clarence Fifer, 212 W. Linden Ave., Burbank, Calif.

Filed Nov. 12, 1970, Ser. No. 88,686
Int. Cl. A61f 13/16
U.S. Cl. 128—288 5 Claims



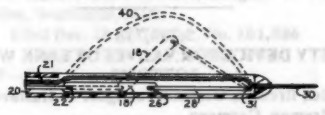
A holding arrangement is installed by stitching or the like into the fabric of underpants for firmly holding in place a sanitary pad with oppositely extending tabs. Holding elements are positioned along the centerline of the underpants at locations forwardly and rearwardly of the crotch portion and each has a pair of superposed locking bands. When each tab is drawn upwardly beneath its associated holding element and pulled downwardly between the locking bands it becomes positively locked in place so that the pad may be maintained securely in place.

3,704,711

CATHETER

Sang C. Park, 87-30 Justice Ave., Elmhurst, N.Y.

Filed June 30, 1971, Ser. No. 158,449
Int. Cl. A61b 17/32; A61m 25/00, 29/00
U.S. Cl. 128—305 4 Claims



A catheter for the creation of an atrial septal defect without thoracotomy. The catheter comprises a main flexible tubular housing and a branch tubular housing. A flexible guide wire extends through the main housing and is secured at the distal end thereof and extends outwardly of the distal end. The guide wire can be deformed into a dome shape protruding from a slit opening in the distal end of the main housing by advancing the guide wire from the proximal end of the main housing. A tiny surgical blade disposed in the slit opening of the main housing is elevated to a desired angle by advancing a flexible control wire pivoted to the blade and extending through the main housing. The branch tubular housing communicates with the main housing and is adapted for connecting a syringe or pressure gauge. A pair of rubber stoppers are provided on the main housing.

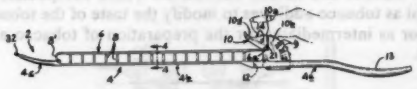
3,704,712

DILATOR DEVICE

Jerry D. Giesy, Portland, Oreg.; Gordon E. Smith, Madison, Wis., and Jack M. Schneider, Denver, Colo., assignors to Medidyne Corporation, Chicago, Ill.

Filed April 10, 1970, Ser. No. 27,362
Int. Cl. A61m 29/00
U.S. Cl. 128—345 21 Claims

A dilator device comprising a first elongated member having a handle-forming portion at one end thereof and a dilating portion in front of said handle-forming portion which dilating portion has a greatly elongated cross-section, and a second elongated member confronting and extending generally parallel to said dilating portion of said first member and having a greatly elongated cross-section similar in shape and orientation to that of the dilating portion of said first member. Links interconnect the second elongated member and the dilating



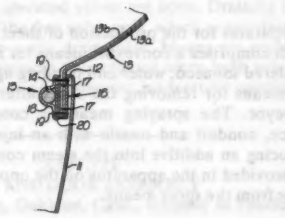
portion of the first member so the longitudinal shifting of the second elongated member will move the second member from a position immediately contiguous to the dilating portion of said first member to a position where it is spaced a relatively large distance therefrom. Operating means are connected to the rear end portion of the second member which means is engageable by the thumb of the hand grasping said handle-forming portion to shift the second member longitudinally.

3,704,713

CONCEALED WIRE STRUCTURE FOR AN OUTER GARMENT

Lois H. Hopper, 6055 Fulcher Ave., North Hollywood, Calif., assignor to Munsingwear, Inc., Minneapolis, Minn.

Filed Feb. 1, 1971, Ser. No. 111,302
Int. Cl. A41c 1/14
U.S. Cl. 128—476 6 Claims



A bra cup reinforcement wire structure for a woman's swim suit or other outer garment. A pair of flanges are formed interior of the garment by stitching together the adjoining body member and respective bra cupfabric edges in outer surface facing relationship. A wire receiving sheath for each cup is sewn to the respective flange, thereby concealing each sheath and stiffener wire from exterior view.

3,704,714

2-ISOPROPYL-5-METHYL-2-HEXENAL, 2-ISOP-ROPYL-5-METHYLHEXANAL,3-HYDROXY-2-ISOPROPYL-5-METHYLHEXANAL, AND DERIVATIVES THEREOF AS TOBACCO FLAVORANTS

Andrew G. Kallianos; Albert H. Warfield, and Melvyn I. Simpson, all of Durham, N.C., assignors to Liggett & Myers Incorporated, New York, N.Y.

Continuation-in-part of Ser. Nos. 806,682, March 12, 1969, abandoned, and Ser. No. 57,414, June 19, 1970, abandoned, and Ser. No. 73,194, Sept. 17, 1970, abandoned. This application June 16, 1971, Ser. No. 153,900
Int. Cl. A24b 15/00
U.S. Cl. 131—17 R 8 Claims

The base-catalyzed self-condensation of isovaleraldehyde yields a mixture of threo- and erythro-2-isopropyl-5-methyl-3-hydroxyhexanal. The reaction conditions can be so chosen as to favor predominance of one isomer over the other. Upon vacuum distillation of the mixture, one of the isomers

preferentially dehydrates yielding 2-isopropyl-5-methyl-2-hexenal as a distillate and unchanged 3-hydroxy-2-isopropyl-5-methylhexanal as the residue. These aldehydes are the parent members of a class of compounds composed of 2-isopropyl-5-methylhexanal, 3-hydroxy-2-isopropyl-5-methylhexanal, 2-isopropyl-5-methyl-2-hexenal, and the alcohol and carboxylic acid derivatives of these aldehydes, the ester and ether derivatives of the alcohols and acids, as well as certain other alcohol and ketone derivatives. These compounds are useful as tobacco additives to modify the taste of the tobacco, and/or as intermediates for the preparation of tobacco additives.

3,704,715

APPARATUS FOR THE PRODUCTION OF A SHEET OF TOBACCO

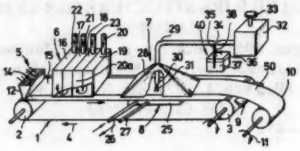
Paul Buchmann, Basel, Switzerland, and Monique Beringer, St. Louis, France, assignors to Tamag Basel AG, Basel, Switzerland

Filed Sept. 24, 1970, Ser. No. 74,989

Claims priority, application Germany, Nov. 10, 1969, P 19 56 402.4

Int. Cl. A24b *03/14*

U.S. Cl. 131—140 C **3 Claims**



Apparatus for the production of sheet tobacco is disclosed which comprises a conveyor, means for spraying a mixture of powdered tobacco, water and bonding agent on the conveyor and means for removing the sheet after formation from the conveyor. The spraying means is constituted of a steam source, conduit and nozzle with an injection means for introducing an additive into the steam conduit. Cooling means are provided in the apparatus on the opposite side of the conveyor from the spray means.

3,704,716

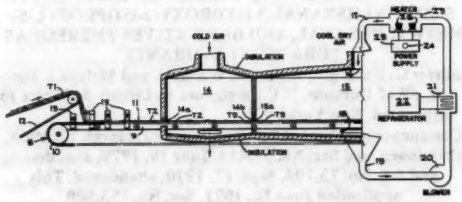
METHOD FOR CONTINUOUS PREPARATION OF TOBACCO

John A. Abbott, Menlo Park, and Clyde Donald Watson, San Jose, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Dec. 15, 1969, Ser. No. 884,850

Int. Cl. A24b *03/18*

U.S. Cl. 131—140 P **10 Claims**



A method for the continuous processing of tobacco to expand the tobacco, thereby reducing the tar and nicotine content of a given size cigarette, is disclosed. In carrying out the process, the tobacco preferably in shredded form, is moistened with water to a point at which its volume is approximately twice the initial volume, conveyed on a continuously moving conveyor into a freeze chamber and then into a freeze drying chamber wherein air at substantially atmospheric pressure and at about 30° F is passed over the tobacco shreds to effect drying. The drying is carried out to a point at which 90 percent of the moisture is removed. For moistening the tobacco initially, a technique employing floating the tobacco on water and subsequently lifting the tobacco therefrom by a screen may be employed. Further, the final drying may be accomplished in two stages utilizing two drying chambers.

3,704,717

HAIR-SLIDE

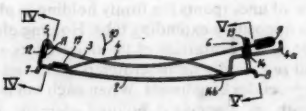
Gilles Morand, Rue Dunand, and Marc Giraudon, HLM Domagne, both of Ceyzeriat, France

Filed March 12, 1971, Ser. No. 123,784

Claims priority, application France, March 13, 1970, 7011355

Int. Cl. A45d *8/00*

U.S. Cl. 132—46 A **7 Claims**



This hair-slide of the type comprising a bridge possibly provided with decorative means on its outer face, a snap-fastener and a spring strip disposed between the bridge and snap fastener, is provided at the end of said bridge which is opposite to the bridge end pivoted to said snap-fastener with fixed hooking means adapted to be resiliently engaged by the free end of said snap-fastener in the closed position thereof, a resiliently movable locking member normally retained in its locking position and adapted to engage the aforesaid end of said fastener in the zone of said hook means, so as to lock said snap-fastener in its closed position. (Figure 3).

3,704,718

SAFETY DEVICE FOR VALVES OF TANK WAGON BOTTOMS

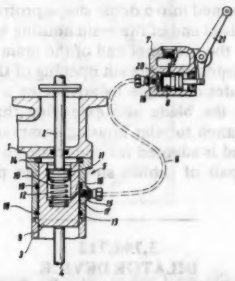
Kurt Rudel, Bremen, Germany, assignor to Gustave F. Gerdts K.G., Breman, Germany

Filed Aug. 5, 1970, Ser. No. 61,139

Claims priority, application Germany, Oct. 13, 1969, P 19 51 465.9

Int. Cl. F16k *17/36*

U.S. Cl. 137—39 **8 Claims**



A safety device is provided for valves in tank bottoms, particularly in tank wagons. The device closes the valve automatically when there is a disturbance endangering the filling or the emptying procedure of the tank, particularly an improper shifting of the tank wagon. The device is particularly characterized by the provision of a hydraulic coupling element con-

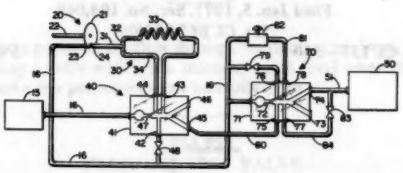
sisting of a piston and cylinder and located between the valve closing member and the valve actuating member. When the element is coupled its entire stroke producing volume is filled with a pressure medium. The element is connected with a reserve container and this connection is operated by a valve which in case of disturbance permits an escape of the pressure medium from the cylinder into the reserve container.

3,704,719

FREQUENCY RESPONSIVE FLUID SWITCH

Gary E. Trull, Fridley, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 18, 1970, Ser. No. 47,536
Int. Cl. F15c *1/12, 3/00*
U.S. Cl. 137—81.5 3 Claims



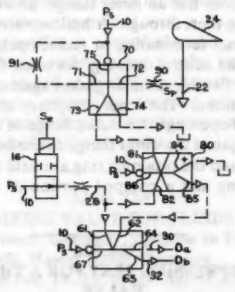
A frequency responsive fluid switching circuit including a fluidic AND gate and a delay line, for producing an output signal when the period of an applied fluid pulse train substantially equals the time delay of the delay line.

3,704,720

FLUIDIC DEICER VALVE

Frederick A. Kaiser, Clinton, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 28, 1970, Ser. No. 101,886
Int. Cl. F15c *1/12*; B64d *15/04*
U.S. Cl. 137—81.5 4 Claims



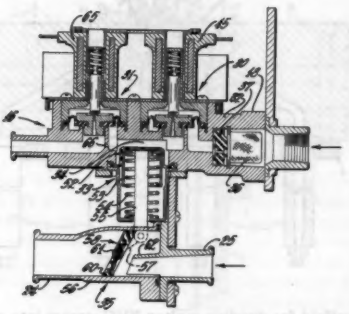
A pneumatically controlled deicer valve is provided for inflating the distensible elements adapted to prevent the accumulation of ice upon wings and other air-foils and surfaces of aircraft. Unregulated engine bleed air is supplied directly to the valve and on command of a timer fed directly into the deicing boot. A fluidic circuit in the valve causes the boot to be evacuated immediately after the boot has attained a predetermined value of pressure. An ejector which is part of the valve further reduces the pressure in the deicing boot until it is below ambient.

3,704,721

FLUID CONTROL SYSTEM

Ambrose J. Schmitz, Hoffman Estates; William R. McCarty, Skokie, and Howard L. Erickson, Bensenville, all of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 1, 1970, Ser. No. 77,157
Int. Cl. F16k *31/42*
U.S. Cl. 137—102 10 Claims



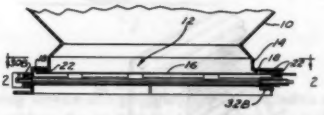
A fluid control system for dishwashers, clothes washers, and the like. A series type fill valve has a hydraulic actuator located between the two valve operators and controlling a drain valve through a mechanical linkage. A flow control device at the inlet to the first valve maintains the pressure at the actuator at a level too low for activation during a fill cycle when both solenoid operated valves are open. Draining is effected by opening of the first valve only, which pressurizes the linear actuator to open the drain valve. Means are provided for bleeding off pressure at the actuator when both solenoid operated valves are closed to prevent inadvertent opening of the drain valve.

3,704,722

CAM AND DOOR ASSEMBLY

Clarence B. Coleman, Oakland, Calif., assignor to Fabricated Metals Inc.

Filed July 12, 1971, Ser. No. 161,548
Int. Cl. F16k *25/00*
U.S. Cl. 137—242 5 Claims



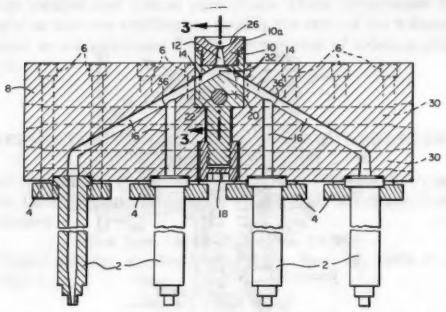
An improved closure assembly for bulk material containers of the type having a discharge opening defined by a frame shaped to receive a closure plate wherein an annular surface of the frame is provided with a seal. The end of the frame wherein the closure plate is inserted and withdrawn has associated with it a bracket which carries a sealing gasket facing the bottom side of the plate. A pair of elongate cam carrying members are rotatably mounted parallel to opposite sides of the opening frame and are maneuverable to at least two positions which in the one instance urges the closure plate into sealed contact with the gasket disposed on the frame annular surface; and in another position relieves the plate from the latter engagement while maintaining wiping contact between the sealing gasket on the aforementioned bracket and that portion of the annular seal where the closure plate is withdrawn.

3,704,723

PVC MANIFOLD

Theodore C. Wheaton, III, Ocean City, and Daniel J. Mikus, Vineland, both of N.J., assignors to Wheaton Industries, Millville, N.J.

Filed Aug. 16, 1971, Ser. No. 175,118
Int. Cl. B01f 15/02
U.S. Cl. 137—341 6 Claims



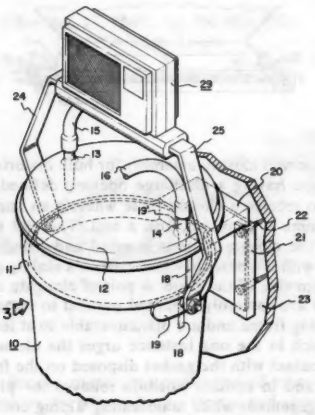
Manifold for dividing molten PVC stream into a plurality of branch streams wherein the trunk passageway is divided into a plurality of diverging branch passageways none of which makes an angle of less than 110° with the trunk passageway and any adjacent two of which converge with one another at a sharp stream splitting wall intersection of 140° or less. In the preferred form of the present invention four parallel one-fourth to one-half inch secondary branch passageways are provided by dividing a first trunk passageway into two branch passageways symmetrical with respect to the trunk passageway converging with one another in an angle of about 140°, each of which is subsequently divided into secondary branches one of which makes an angle of 110° with the first branch and the other of which is coaxial with the first branch for a short distance and then is angled to parallel the other secondary branch.

3,704,724

FLUID LEVEL SENSING/CONTROL SYSTEMS

Legrand K. Holbrook, 2509 Village Circle, Salt Lake City, Utah, and David S. Ostler, 4160 Monarch Way, Salt Lake City, Utah

Filed Feb. 24, 1970, Ser. No. 13,585
Int. Cl. G05d 9/12
U.S. Cl. 137—392 15 Claims



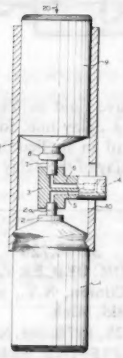
The present invention comprises a fluid level sensing and/or control system whereby the rise of a given, electrical-parameter affecting fluid to a given level within a container, can be sensed and/or utilized advantageously to actuate a given object. Where such object is an indicator unit, then the same may have an input responsive to fluid level rise at a given level, to alter the electrical characteristic of such input. In one form of the invention, electrically conductive means communicate with the interior of the container of the system, at a predetermined level or area thereof, such that when the fluid level rises at this level, the fluid itself may complete or otherwise affect an associated circuit, through such electrically conductive means, to the indicator employed. The indicator may be miniaturized to provide a signal generator responsive to fluid level rise for generating an audible or other signal.

3,704,725

HIGH PRESSURE PROPELLANT DISPENSING VALVE

Jean Marand, Saint Benoit, France, assignor to Ciba-Geigy Corporation, Greenburgh, N.Y.

Filed Jan. 5, 1971, Ser. No. 104,060
Int. Cl. B65d 83/00
U.S. Cl. 137—550 5 Claims



A body member has an inner flange, an outer flange and a central opening therethrough. A hollow valve stem has a longitudinal channel terminating in radial openings and is positioned within the central opening. An inner flange of a retaining ring seals a flexible annular gasket against the inner flange of the body member. The inner periphery of the gasket obturates the radial openings. An outer flange of the retaining ring is positioned against the outer flange of the body member. The body member and the retaining ring are held together between a flange opening and a crimped portion of a propellant cartridge.

3,704,726

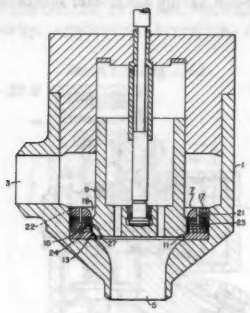
NOISE SUPPRESSING SEAT FOR A THROTTLING VALVE

Ivor J. Lewis, Aston, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 2, 1971, Ser. No. 111,812
Int. Cl. F15d 1/00; F16k 47/14
U.S. Cl. 137–625.3 10 Claims

A noise suppressing throttling plug valve having a seat ring with a plurality of right-angled ducts extending therethrough, upstream of a valve seat. As the plug rises, an increasing number of ducts are uncovered providing an increase in fluid flow through the valve. Successively uncovered ducts provide shorter fluid paths to provide a flow rate that increases as the distance the plug moves from the seat increases. The ducts cause the fluid to be broken up into discrete jets, which reduce

the noise caused by high velocity fluid flowing over the seat. As the valve plug moves away from the seat, the flow through the ducts diminishes, so that as the valve plug approaches its



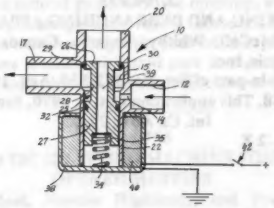
fully open position, the flow through the ducts is minimal, thus providing a valve with a low intensity noise level when throttling and a low pressure drop when fully open.

3,704,727

FLUID CONTROL VALVE

Carmeli Adahan, 1626 Bonita Ave., Apt. No. 6, Berkeley, Calif.

Filed June 1, 1971, Ser. No. 148,588
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.65 **8 Claims**



A fluid control valve for relieving line pressure. A shuttle valve having a longitudinal bore is reciprocably mounted in a housing. The housing is provided with a line pressure inlet having a metering orifice, a central chamber, a line pressure outlet and an exhaust outlet having a valve seat. The shuttle valve is normally biased to seal the exhaust outlet from the central chamber. An externally mounted solenoid coil provides a means for unseating the shuttle valve and venting the control chamber via the exhaust outlet.

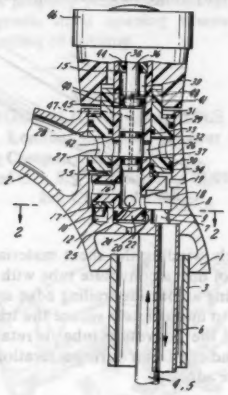
3,704,728

MIXING VALVE FOR FLUIDS

Egon Huneke, Hemer, Germany, assignor to Friedrich Grohe Armaturenfabrik, Hemer/Brepl, Germany

Filed Dec. 10, 1970, Ser. No. 97,473
Claims priority, application Germany, Dec. 11, 1969, P 19 62 026.9
Int. Cl. F16k *11/14*
U.S. Cl. 137—636.1 **14 Claims**

A valve housing has an internal mixing chamber and an elongated passage rising from the mixing chamber. At least two fluid conduits open at the bottom wall of the mixing chamber and communicate with the latter so as to discharge fluid under pressure thereinto. A valve arrangement includes a member of arcuately segmental shape which is provided at its opposite ends with valve members accommodated in the open ends of the conduits and capable of being deflected from the closed position in which they stop fluid flow, to open positions in which they are located farther in the mixing chamber and permit the fluid flow into the same. A valve control element is mounted in the passage and is turnable as well as axially displaceable therein, having a lower end face constructed as a cam face and capable of engaging the valve members in a



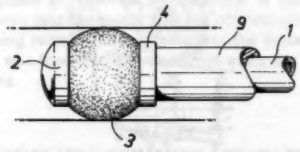
sense moving them to closed position, or retracting therefrom in a sense permitting the valve members to be displaced by the pressure of fluid in the conduits to positions in which they are spaced at different distances from the openings of the conduits and permit the fluid flow out of the conduits into the mixing chamber at different rates.

3,704,729

PLUMBING DEVICE

Thomas Alfred Tomlinson, 348 Manor Road East, Toronto 298, Ontario, Canada

Continuation-in-part of Ser. No. 19,167, March 13, 1970, abandoned. This application Dec. 21, 1971, Ser. No. 210,438
Int. Cl. F16l *55/10*
U.S. Cl. 138—90 **12 Claims**



A plumbing device for plugging a pipe includes a radially expansible rubber sleeve disposed about one end of an axial shaft or tube. An annular flange is provided on the end of the shaft while an elongated metal cylinder is disposed coaxially about the shaft on the opposite side of the sleeve to transmit axial compressive movement to the rubber sleeve from a screw jack mechanism releasably secured on the shaft in proximity to its other end.

3,704,730

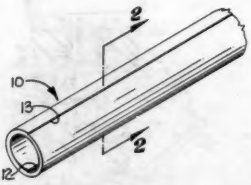
CONVOLUTE TUBE AND METHOD FOR MAKING SAME

Werner Witzig, Hartsville, S.C., assignor to Sunoco Products Company, Hartsville, S.C.

Filed June 23, 1969, Ser. No. 835,393
Int. Cl. F16l *9/14*, *9/16*
U.S. Cl. 138—144 **5 Claims**

An elongate, convolutely wound, adhesively secured tube and method for making same from elongate sheet material and

being characterized by eliminating the necessity of having a high moisture content in the adhesive for holding the wound tube together following winding, wherein the method includes applying relatively slow acting, low moisture adhesive to a major portion of a first surface of the sheet material, applying relatively fast acting adhesive to a minor portion of the first surface substantially adjacent a first longitudinal edge thereof



and a convolutely winding the sheet material transversely of the length thereof into a convolute tube with the first longitudinal edge forming an outside trailing edge and the fast acting adhesive acting to immediately secure the trailing edge to the outer surface of the convolute tube to retain the convolute tube in the wound condition during activation of the slow acting, low moisture adhesive.

3,704,731

WARPBEAM BRAKE DEVICE

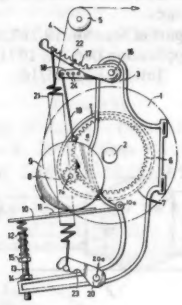
Karl Wernli, Rothrist, Switzerland, assignor to Wernli AG Verbandstaff-Fabrik-Weberei, Rothrist, Switzerland

Filed Feb. 26, 1971, Ser. No. 119,304

Claims priority, application Switzerland, March 2, 1970, 3006/70

Int. Cl. D03d *49/08, 49/10*

U.S. Cl. 139—109 **10 Claims**



At normal warp thread tension, a transmission gear turned by the warpbeam, rotates a brake disc which is in contact with a brake surface due to the action of a spring. When the warp thread tension increases, the transmission gear turns a carrier, on which the brake disc is mounted, so that the brake disc moves away from the brake surface against the action of the spring so that the warp thread tension is reduced, and the carrier with the brake disc is moved by the spring to press the brake disc against the brake surface.

3,704,732

DISPENSING NOZZLE

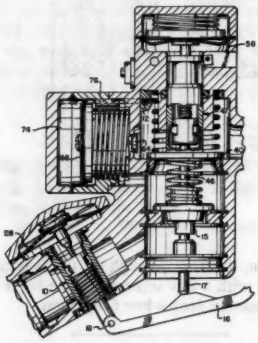
Edward A. Mayer, Newburgh, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed June 1, 1971, Ser. No. 148,366

Int. Cl. B65b *3/26*

U.S. Cl. 141—128 **4 Claims**

An adjunctive device for automatic filling and topping-off dispensing nozzle to introduce a time lag or delay between the initial tank filling and topping-off operations by causing a unidirectional delay in the passage of a fluid thru a flow conduit which will, in turn, cause a uni-directional delay in pressure equalization thru said conduit, the invention comprising a spindle in the conduit having a diameter substantially less than



that of the conduit but having a series of frusto conical surfaces axially aligned with the conduit and inclined in one axial direction so as to facilitate flow in that direction but presenting radial surfaces which impede flow in the opposite direction.

3,704,733

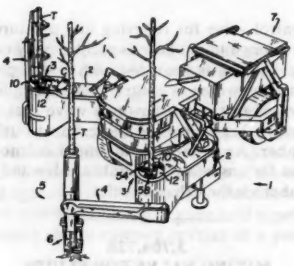
DEBARKING AND DEBRANCHING APPARATUS

Bruce John McColl, Whitby, Ontario, Canada, assignor to Owens-Illinois, Inc.

Continuation-in-part of Ser. No. 572,530, Aug. 15, 1966, Pat. No. 3,533,458. This application Oct. 7, 1970, Ser. No. 78,764

Int. Cl. A01g *23/02*

U.S. Cl. 144—2 Z **7 Claims**



A rotary debarker-debrancher consists of apparatus having two coaxially positioned rings defining a path through the center thereof for a bole to travel for processing. The debarking-debranching tool arms have each of their ends pivotally mounted to a separate ring, both rings being rotated by power means in the same direction. The apparatus includes means for altering the circumferential position of one ring with respect to the other during rotation with the result being that the tools are pivoted inwardly or outwardly into or out of engagement with the circumferential surface of the tree. The tools are mounted on plates which overlap in an iris pattern to inhibit debris from entering the apparatus. Further, the tools are rotated in a direction to provide a lead cutting action to remove bark and branches from the bole and therefore throw it outwardly from the apparatus.

3,704,734

TOOL HAVING A HEAD AND A HANDLE

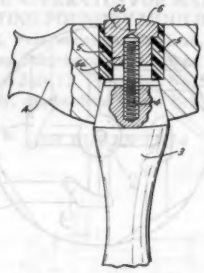
Eduardo Rodriguez Soto, and Joaquin Longo, both of Calle 3, No. 269 Rosario, Santa Fe Province, Argentina

Filed Oct. 20, 1970, Ser. No. 82,317

Claims priority, application Argentina, April 28, 1970, 228.374

Int. Cl. B25g 3/12

U.S. Cl. 145—29 B 8 Claims



A tool head has two spaced opposite sides and a stepped opening including a smaller-diameter first portion of non-circular cross-section which converges from one toward the other side, and a larger-diameter portion extending from the other side to and in alignment with the first portion. An end portion of a handle is received matingly in the first portion and an end face of it faces the section portion. A threaded pin is anchored in the end portion of the handle and has a part projecting into the second portion of the opening, with an elastic tubular bushing matingly received in this second portion and with clearance surrounding this part of the pin. Threaded retaining means meshes with said part in the clearance and bears against the bushing at the other side thereof.

3,704,735

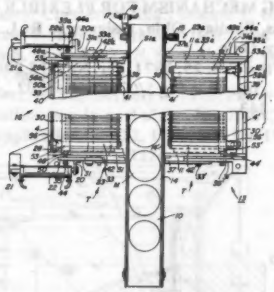
AUTOMATIC SPLITTING MACHINE FOR HAND-OPENED MUFFINS

Eugene M. Noel, Newton Highlands, and Frank Conelly, Plymouth, both of Mass., assignors to Said Noel by said Conelly, a part interest

Filed Feb. 22, 1971, Ser. No. 117,333

Int. Cl. B26d 3/08

U.S. Cl. 83—2 4 Claims



An automatic muffin-splitting machine of increased productivity having a traveling conveyor belt for intermittently delivering muffins to a tining section to be tined and split, said tining section having first and second pluralities of tines operating from respective opposite sides of the conveyor belt, said pluralities of tines traversing the belt in simultaneous reciprocal interdigitating cooperation from the opposite sides thereof, said first plurality of tines being automatically lifted out of the plane of interdigitation with the second plurality of tines as full penetration of the tines into the muffins is reached, and said intermittent tining of said muffins being coordinated with movement of the traveling belt by cam-actuated, pilot-operated, air cylinder-powered, over-center link and lever mechanism; whereby the machine automatically produces muffins properly perforated and split, but not fully separated, for gentle hand opening whenever desired in preparation for grilling or toasting.

3,704,736

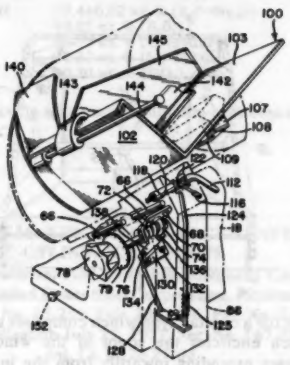
FOOD SLICING MACHINES

Clifford Pratley, London, England, assignor to The Hobart Manufacturing Company, Troy, Ohio

Filed Oct. 5, 1970, Ser. No. 78,091

Int. Cl. B26d 4/00

U.S. Cl. 83—397 7 Claims



A slicing machine has a base which supports an inclined rotary knife driven by a motor and covered by a removable knife guard. A carriage is supported for reciprocation adjacent the knife and an adjustable gage plate, and includes a removable inclined tray member for supporting the articles to be sliced. A first interlock system prevents removal of the tray member until the gage plate is set at zero or flush with the knife, and a second interlock system prevents operation of the motor when the knife guard is removed for cleaning. A third interlock system assures that the motor will not operate when the knife guard is being reassembled in the event the main motor control switch was inadvertently actuated when the knife guard was removed.

3,704,737

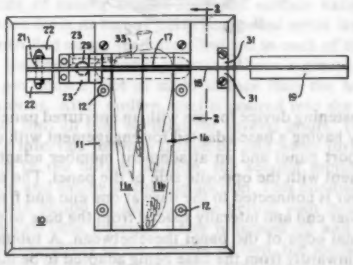
VEGETABLE TRIMMING APPARATUS

Wesley Stout, 4414 Brittany Road, Indianapolis, and W. J. Stout, IV, R.R. 4 Box 600, Brownsburg, both of Ind.

Filed May 13, 1971, Ser. No. 143,116

Int. Cl. B26d 1/26

U.S. Cl. 99—637 3 Claims



Disclosed is a holder, V-shaped in cross section, adapted to receive vegetables, or the like, to be trimmed in the bight of

the V. A knife is mounted to be moved transversely across the V-shaped holder portion to trim material in the holder and the base of the apparatus, underlying the knife edge is provided with a knife entry slot and an enlarged slot underlying and communicating with the knife entry slot to permit husks or leaves pulled into the entry slot by the downward motion of the knife to drop through the enlarged slot.

3,704,738

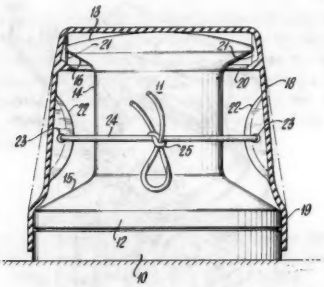
CAPSTAN TYPE WINCH COVER

Frank M. LeCompte, Watchung, N.J., assignor to Tingley Rubber Corporation, South Plainfield, N.J.

Filed Aug. 18, 1971, Ser. No. 172,724

Int. Cl. B65d *65/02*

U.S. Cl. 150—52 R **9 Claims**



A cover for a capstan type winch comprises a blind tie-down cord which encircles the spool of the winch and threads through ears extending inwardly from the inner wall of the cover. The cord acts to hold the cover in place when tensioned and tied. A series of axially disposed ribs extending inwardly from the cover wall near the top yieldably engage the spool at the top and accommodate the cover for use with winches of different sizes.

3,704,739

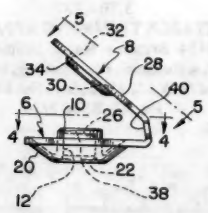
FASTENING DEVICE

Robert J. Holton, Rocky River, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 30, 1970, Ser. No. 93,602

Int. Cl. F16b *39/00*

U.S. Cl. 151—41.7 **5 Claims**



A fastening device for use with an apertured panel including a body having a base adapted for engagement with one side of a support panel and an attachment member adapted for engagement with the opposite side of the panel. The attachment member is connected to the base at one end and free adjacent the other end and laterally spaced from the base to receive the marginal edge of the panel therebetween. A tubular hub extends inwardly from the base being adapted to be inserted into the aperture in the panel. The hub includes a bore adapted to receive a threaded member therein for locking the hub within the aperture to secure the device on the panel.

3,704,740

SUSPENSION SYSTEMS

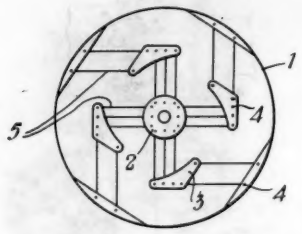
John Russell Crompton Moore, Little Melton, Norwich, England

Filed May 21, 1971, Ser. No. 147,382

Claims priority, application Great Britain, May 28, 1970, 25,857/70

Int. Cl. B60b *9/04*

U.S. Cl. 152—75 **20 Claims**



A rotatable member for a suspension system comprises a hub and a rim joined by at least two compliant spoke structures each having two portions connected in series at an angle to each other between hub and rim and each portion having two substantially parallel spoke members forming a compliant parallelogram arrangement.

3,704,741

OZONE RESISTANT ETHYLENE/PROPYLENE TERPOLYMER LAMINATES TO OTHER RUBBER

David L. Turk, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 619,195, Feb. 28, 1967. This application Aug. 17, 1970, Ser. No. 64,657

Int. Cl. B32b *27/08, 27/26;* **B60c** *1/00*

U.S. Cl. 152—358 **12 Claims**

Sulfur vulcanizable, ozone resistant blends of ethylene/propylene terpolymer and conventional general purpose rubbers containing a sulfonamide/sulfur vulcanization system and capable of adhering to a conventional general purpose rubber composition on vulcanization of the two phases. These blends may be used in the construction of tire sidewalls and cover strips for pneumatic tires.

3,704,742

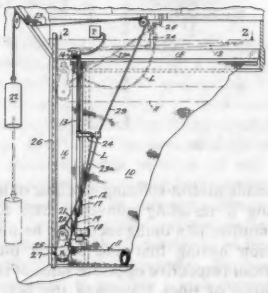
SEALING MECHANISM FOR FLEXIBLE DOORS

Ralph L. Kuss, Findlay, Ohio, assignor to R. L. Kuss & Co., Inc., Findlay, Ohio

Filed Feb. 25, 1971, Ser. No. 118,878

Int. Cl. A47g *5/02;* **E06b** *9/202*

U.S. Cl. 160—243 **5 Claims**



This invention relates to a sealing mechanism for flexible doors for large building openings such as aircraft hangars,

gymnasiums, etc. On each vertical edge of the door is a pivotally mounted arm, having a flexible flap connected thereto, which is automatically pivoted into sealing engagement with a side of the flexible door when the door is moved to a closed position. Means are also provided for pivotally disengaging the arm and flap from the flexible sheet upon opening the door and for raising it up above the level of the door.

3,704,743

METHOD AND APPARATUS FOR MANUFACTURE OF COLD SETTING FOUNDRY MOULDS AND CORES

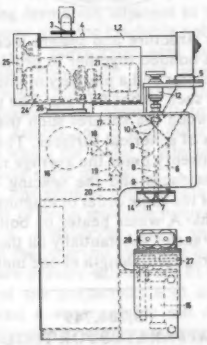
Albert Edwards, Peterborough, England, assignor to Baker Perkins Limited, Peterborough, England

Filed July 13, 1970, Ser. No. 54,227

Claims priority, application Great Britain, July 21, 1969, 36,548/69

Int. Cl. B22c *15/24*

U.S. Cl. 164—21 **12 Claims**



A method and means for making foundry moulds or cores from a cold setting sand/resin/catalyst mixture in which separate metered charges of sand and resin and sand and catalyst are supplied to a mixing chamber in which operates a rotary mixing element and when sufficient quantities of each charge have been supplied to the chamber for the core or mould being produced the resultant mixture is expelled from the chamber into a core or mould box by applying a blast of compressed air to the chamber.

3,704,744

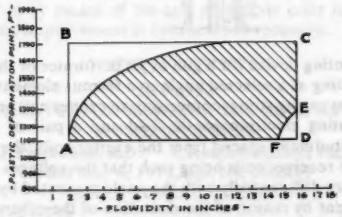
SLAG USE IN CONTINUOUS CASTING OF STEEL

James W. Halley, Chesterton, Ind.; Donald E. Grimes, Lasing, Ill.; Norman T. Mills, Highland, Ind., and Krishna Rao Yalamanchili, New York, N.Y., assignors to Inland Steel Company, Chicago, Ill.

Division of Ser. No. 52,750, July 6, 1970, Pat. No. 3,649,249, which is a continuation-in-part of Ser. No. 7,464, Feb. 2, 1970. This application Oct. 22, 1971, Ser. No. 191,601

Int. Cl. B22d *11/00*

U.S. Cl. 164—82 **10 Claims**



A process of continuous casting of steel in which a layer of a molten synthetic slag about one-half to two inches thick is maintained on the surface of a pool of molten steel in the upper end of the continuous casting mold, and said synthetic slag being a mixture of oxides and fluorides wherein said oxides and fluorides are combined in said slag to provide said slag with a plastic deformation point between about 1,100°F and about 1,700°F in accordance with the following equation:

$$\text{Plastic Deformation (Point (°F))} = 1{,}540 - \text{wt. \%}\ (K_2O + Na_2O) - 14\ \text{wt. \%}\ (B_2O_3) - 54\ \text{wt. \%}\ (LiF + Li_2O) + 10\ \text{wt. \%}\ CaO;CaF_2) + 1\ \text{wt. \%}\ (SiO_2),$$

said oxide and fluorides also being combined in said slag to provide said slag with a flowidity between about 2 inches and about 16 inches in accordance with the following equation:

$$\text{Flowidity (inches)} = 9.4 + 0.02\ \text{wt. \%}\ (K_2O + Na_2O) + 0.05\ \text{wt. \%}\ (B_2O_3) + 0.10\ \text{wt. \%}\ (CaO + CaF_2) + 0.32\ \text{wt. \%}\ (LiF + Li_2O) - 0.20\ \text{wt. \%}\ (SiO_2),$$

and said slag having an alumina solubility in excess of 20 percent by wt.

3,704,745

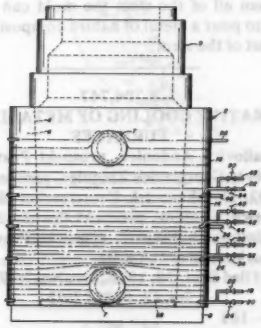
METHOD OF MAKING SOUND LARGE GENERALLY CYLINDRICAL INGOTS

Leonard M. Saunders, Pine Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 13,259, Feb. 20, 1970, Pat. No. 3,633,656. This application July 29, 1971, Ser. No. 167,335

Int. Cl. B22d *27/04*

U.S. Cl. 164—126 **4 Claims**



A large generally cylindrical ingot mold is provided with four sections of tubing around its outer surface except for some distance from its top. A valve controlled water feed and a valve controlled steam feed are provided to each of the sections. The intermediate cooling sections have a greater cooling effect per square foot of mold surface than the top and bottom sections. After molten steel is poured into the mold, steam is fed into all four sections for several hours. Then at spaced time intervals steam is turned off and water turned on successively to the bottom section, the second section, the third section and finally to the top section. This condition exists for a time period longer than the period with steam on. Then at spaced time intervals water is turned off and steam turned on successively to the bottom section, the second section, the third section, and finally to the top section. The steam is turned off prior to stripping of the mold from the ingot.

3,704,746

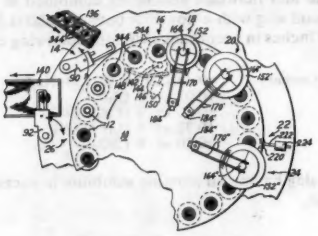
MACHINE FOR CASTING OBJECTS COMPOSED OF SEPARATED DIFFERENT METALS AUTOGENOUSLY JOINED

Earl A. Thompson, deceased, late of Bloomfield Hills, Mich. (by Elizabeth F. Thompson, executrix); Paul Franseth, Grosse Point, and Michael M. Wild, Royal Oak, both of Mich. (executors), assignors to F. Jos. Lamb Company, Warren, Mich.

Division of Ser. No. 777,512, June 17, 1968, Pat. No. 3,503,375, which is a division of Ser. No. 221,115, Sept. 4, 1962, Pat. No. 3,395,747. This application March 18, 1970, Ser. No. 20,567

Int. Cl. B22d *17/32, 23/00, 27/08*

U.S. Cl. 164—157 6 Claims



T-shaped valves for internal combustion engines are made with different parts formed of different metals, autogenously joined.

A mold holder, holding a number of rotary molds, head down, is moved past a series of pouring stations each of which deposits a metered amount of molten metal in that mold which is opposite it. At the first station a first molten metal is poured into the empty mold and the mold is spun to move the metal centrifugally outward to form the rim of the valve. Then, while spinning, the mold is moved to a second pouring station which pours a quantity of different metal to form the rest of the valve head, and if desired, part or all of the stem. If the second mold pours less than all of the stem the mold can be moved to a third station to pour a metal of a third composition to form the remaining part of the stem.

3,704,747

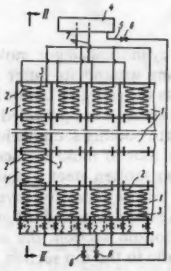
EVAPORATIVE COOLING OF METALLURGICAL FURNACES

Sergei Mikhailovich Andoniev, prospekt Pravdy, 5, kv. 60, Kharkov; Petr Georgievich Zhigulev, prospekt Metallurgov, 39, kv. 202, Novokuznetsk Kemerevskoi oblasti; Gennady Alexandrovich Kudinov, prospekt Pravdy, 5, kv. 212, and Oleg Vladimirovich Filipiev, prospekt Pravdy, 5, kv. 41, both of Kharkov, all of U.S.S.R.

Filed Sept. 30, 1970, Ser. No. 76,704

Int. Cl. F28f *27/02*

U.S. Cl. 165—101 4 Claims



A device for evaporative cooling of metallurgical furnaces, wherein cooling members are interconnected and each member has at least two rows of coils for passing the coolant arranged in parallel relationship to the working surface of the cooling member and along the width of the cooling member.

3,704,748

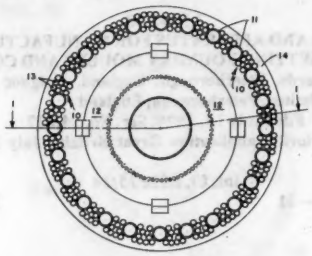
HEAT TRANSFER STRUCTURE

William H. Hapgood, Brookline, Mass., assignor to Ratheon Company, Lexinton, Mass.

Continuation-in-part of Ser. No. 737,135, June 14, 1968, abandoned. This application Feb. 11, 1970, Ser. No. 10,334

Int. Cl. F28f *01/32*

U.S. Cl. 165—165 22 Claims



A heat transfer structure and system including a matrix of tubes and spheres bonded together to provide a conduit for a first fluid such as water and a plurality of interconnected paths for a second fluid such as hot flue gas. The paths are made up of the spaces between the spheres such that the walls of the paths are portions of spherical surfaces. The total path length is made less than twenty times the average radius of curvature of the spherical surfaces and the spacing between adjacent tube elements is of the same order of magnitude as the average length of the paths. A water heater or boiler so constructed may be made to transfer substantially all the heat in a flue gas to water in an average path length of one inch or less.

3,704,749

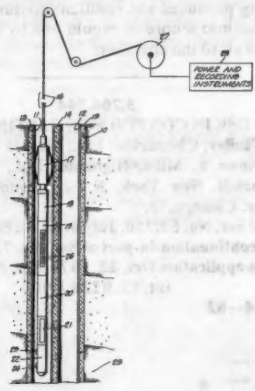
METHOD AND APPARATUS FOR TOOL ORIENTATION IN A BORE HOLE

James D. Estes, and Kirby De Gough, both of Houston, Tex., assignors to N L Industries, Inc., New York, N.Y.

Filed May 6, 1971, Ser. No. 140,813

Int. Cl. E21b *47/024, 43/119*

U.S. Cl. 166—255 15 Claims



An orienting device for a gun or jet perforator or the like to permit setting at a selected angle to a ferrous element such as an adjacent casing string, comprising an exciter coil producing an alternating electromagnetic field and a pair of receiver coils longitudinally spaced from the exciter coils, the disposition of the receiver coils being such that the voltages induced therein vary differentially with the angle presented by the ferrous element by reason of the distortion of the otherwise axially symmetrical field. Electronic means are provided to convert the differential voltages to a pulsed signal which is received at the surface and caused to register the orientation

angle. Motor means are provided to rotate the device. All operating power, control signals, and information signals are transmitted by a single conductor cable serving also to suspend the device.

3,704,750

PROCESS FOR INHIBITING SCALE FORMATION IN OIL WELL BRINES

Leon H. Miles, Plano, and Graham E. King, Dallas, both of Tex., assignors to Atlantic Richfield Company, New York, N.Y.

Continuation-in-part of Ser. No. 789,927, Jan. 8, 1969, abandoned. This application Nov. 25, 1969, Ser. No. 879,919

Int. Cl. C02b *5/06*; **E21b** *43/25, 43/26*

U.S. Cl. 166—279 **23 Claims**

A method for introducing an inhibitor, e.g. an inhibitor against scale formation, into oil well brines is disclosed. This method comprises introducing into the porous reservoir structure, i.e. oil-bearing formation adjacent to the bore of an oil well a relatively water or brine insoluble polyvalent metal salt of the inhibitor, e.g. polyacrylic acid and/or hydrolyzed polyacrylamide, the polyacrylic acid having a molecular weight range of about 17,000 to 50,000, and the hydrolyzed polyacrylamide having from about 10 to 50 percent unhydrolyzed amide groups and a molecular weight of about 1,000 to 8,000, in which the metal is selected from the group consisting of alkaline earth metals, Zn^{++}, Cu^{++}, Pb^{++}, Fe^{+++}, Cr^{+++}, and Al^{+++}. The method comprises in situ formation of the relatively water or brine insoluble polyvalent metal salt of the inhibitor, e.g. polyacrylic acid and/or hydrolyzed polyacrylamide, in the reservoir structure by introducing into the porous structure a water-soluble salt of the inhibitor, e.g. the sodium salt of the polyacrylic acid and/or hydrolyzed polyacrylamide, and a water-soluble salt of the polyvalent metal in a strongly acidic, aqueous solution. In the in situ method the strong acid in solution initially inhibits reaction of the salts but is dissipated by the fluids in the oil-bearing formation and neutralized by the formation rock to allow reaction and formation of the desired water-insoluble metal salt of polyacrylic acid and/or hydrolyzed polyacrylamide in the formation.

3,704,751

METHOD FOR STIMULATING WELL PRODUCTION

Jack F. Tate, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed June 21, 1971, Ser. No. 155,309

Int. Cl. E21b *43/27*

U.S. Cl. 166—307 **16 Claims**

The production of hydrocarbons from a subterranean hydrocarbon-bearing formation containing acid-soluble components, such as one composed at least in part of dolomite or limestone, is stimulated by injecting into the formation a composition comprising an aqueous solution of a mineral acid having dissolved therein a phosphate ester of prescribed formula. The elimination of plugging of capillary openings within the formation and mineral scale deposition on production equipment due to post-precipitation of dissolved salts subsequent to acidization by means of the said phosphate ester results in a substantial improvement in hydrocarbon recovery.

3,704,752

APPARATUS FOR WORKING THE COMPOST OF MUSHROOM BEDS

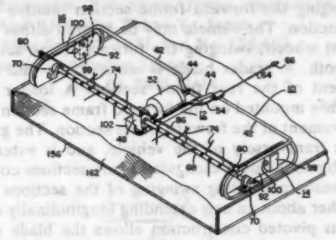
Thomas J. Piacentino, R.D. 2, Kennett Square, Pa.

Filed May 6, 1971, Ser. No. 140,667

Int. Cl. A01b *33/02, 33/12*

U.S. Cl. 172—116 **10 Claims**

A compost supported non-dirigible frame of a width for extending across a mushroom bed mounts a shaft and an electric motor and change speed unit operable for actuating the shaft. The shaft mounts a plurality of tines angularly spaced about the shaft and of a length for digging into the compost as they successively present downwardly when the shaft is actuated for working the compost and simultaneously advancing the frame progressively along the mushroom bed.



3,704,753

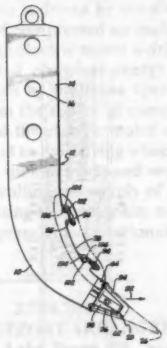
RIPPER SHANK

Hector Bernard Hasforth, Botony, Sydney, Australia, and William H. Wolff, Atherton, Calif., assignors to said Wolff by said Hasforth, a part interest

Filed April 29, 1970, Ser. No. 32,878

Int. Cl. A01b *13/08*; **E02j** *9/28*

U.S. Cl. 172—700 **3 Claims**



A ripper shank having a replaceable earth working tooth and a replaceable wear plate. Improved configurations that afford rapid installation and removal of the wear plate and earth working tooth on the shank. The wear plate and tooth are retained in place by removable cross pins that have retaining shoulders intermediate their ends.

3,704,754

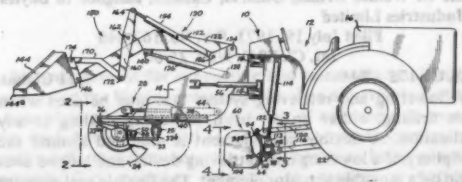
ARTICULATED VEHICLE HAVING AN ADJUSTABLE GRADER BLADE THEREON

Jack D. Layton, Salem, Oreg., assignor to Layton Manufacturing Company, Salem, Oreg.

Filed Feb. 19, 1970, Ser. No. 12,767

Int. Cl. E02f *3/12, 3/76*

U.S. Cl. 172—782 **13 Claims**



A vehicle having wheel-supported forward and rear frame sections which are pivotally interconnected for swinging rela-

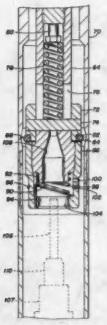
tive to each other about an upright axis. The wheels supporting the forward frame section are steerable relative to the forward frame section, and power-operated means is provided for swinging the forward frame section relative to the rear frame section. The vehicle may be steered either by steering the front wheels, swinging the forward frame section, or by doing both. A grader blade is mounted on and follows the movement of the rear frame section. A loader boom and bucket are mounted on the forward frame section and follow the movement of the forward frame section. The grader blade extends transversely of the vehicle, and is extensible. The grader blade includes elongated blade sections connected by pivot means permitting swinging of the sections relative to each other about an axis extending longitudinally of the vehicle. This pivoted construction allows the blade to produce either a crown or a valley contour in the material it works.

3,704,755

RETRIEVING AND LOWERING SYSTEM FOR A CORE BARREL

Tiete O. Wolda, Orillia, Ontario, Canada, assignor to Boyles Industries Limited

Filed June 18, 1971, Ser. No. 154,320
Int. Cl. E21b *9/20, 25/00*
U.S. Cl. 175—246 **13 Claims**



A lowering and retrieving system that may be used when core drilling, either up or down including drilling at any inclination. A latching washer in the body of the lowering and retrieving device grips an elongated spearhead attached to the core barrel. The spearhead opens a channel to allow fluid to bypass the lowering and retrieving device.

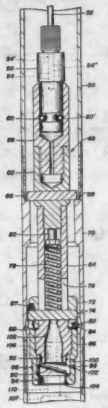
3,704,756

APPARATUS FOR LOWERING AND RETRIEVING A CORE BARREL

Tiete O. Wolda, Orillia, Ontario, Canada, assignor to Boyles Industries Limited

Filed July 19, 1971, Ser. No. 163,640
Int. Cl. E21b *9/20, 25/00*
U.S. Cl. 175—246 **11 Claims**

A lowering and retrieving system that may be used when core drilling, either up or down, including drilling at any inclination. A flexible seal element is mounted around the periphery of a lowering and retrieving device and looped over a pin on a movable actuator element. The flexible seal element forms a fluid seal with a hollow drill string allowing the lowering and retrieving device to be pumped through the drill string. An elongated spear head on a retractable core barrel contacts and moves the movable actuator element thereby



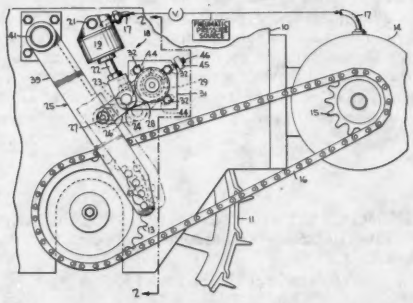
changing the position of the flexible seal element and a fluid channel around the lowering and retrieving device is opened.

3,704,757

AUTOMATIC BRAKING MECHANISM

John W. Buress, III, Winston-Salem, N.C., assignor to Drill Carrier Corporation, Salem, Va.

Filed May 17, 1971, Ser. No. 143,982
Int. Cl. B62d *11/04*; F16d *65/24*
U.S. Cl. 180—6.48 **6 Claims**



Braking mechanism for a traction apparatus of the opposed traction unit type, automatically operable independent of the pneumatic control for the service brakes and operated by means of an air cylinder through the same pneumatic pressure source used for the chain drive of each traction unit. The braking mechanism includes a pivotally-mounted brake arm having sprocket teeth engaging means thereon movable into and out of engagement with the sprocket teeth of each chain drive sprocket wheel by means of a toggle linkage which, when collapsed by the air cylinder, moves the brake arm out of engagement and, when moved slightly past a dead-center position by the air cylinder, moves the brake arm into engagement under the assistance of a torsion spring.

3,704,758

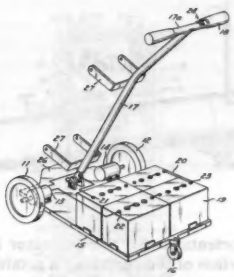
GOLF CART

David Cropp, 501 Chestnut Street, Meadville, Crawford County, Pa.

Filed May 18, 1970, Ser. No. 38,331
Int. Cl. B62d *51/04*
U.S. Cl. 180—19 R **2 Claims**

The disclosure shows a vehicle suitable for carrying golf bags. The vehicle has two motor driven wheels, having per-

manent field motors connected in series so that in turning, one wheel can slow up or stop while the other wheel continues to rotate and thus drive the vehicle. The armature of one motor, while rotating, limits the current through the stalled motor so that the stalled motor does not overheat. The vehicle has self-



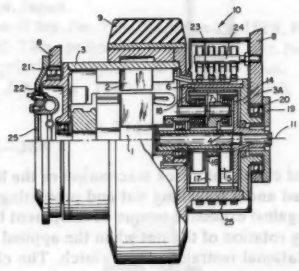
contained multi-celled batteries which are connected to the motors through a tap changing switch on the handle. The vehicle has a third wheel which supports the back of the vehicle and the operator can hold onto the handle and thereby be pulled along.

3,704,759

ROAD WHEEL DRIVE ARRANGEMENT FOR AN ELECTRICALLY POWERED INDUSTRIAL VEHICLE

Emil Slavchev Vitkov; Milko Ivanov Petkov, and Gueorgui Stoylov Atanassov, all of Sofia, Bulgaria, assignors to DSO "Balkancar", Sofia, Bulgaria

Filed Oct. 20, 1970, Ser. No. 82,464
Claims priority, application Bulgaria, Oct. 21, 1969, 13218
Int. Cl. B60k 7/00
U.S. Cl. 180—65 F **1 Claim**



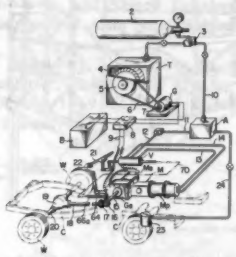
The outer rotor of a statorless electric drive motor and the drive wheel of an electric fork-lift truck or similar vehicle to be powered thereby are each directly connected to the outer motor case or housing. The housing is mounted for rotation with respect to the vehicle body. The central gear of a speed-reducing planetary gear set is affixed to the shaft of the inner rotor. The satellite or, alternatively, the annular ring gear of the set is directly connected to the rotatable motor housing, while the other of such annular or satellite gears is affixed to the body of the vehicle to immobilize such latter gear against rotation. Such an arrangement avoids the necessity of separate rotational connections among the inner and outer rotors and the drive wheel.

3,704,760

ELECTROPNEUMATIC PROPELLING SYSTEM FOR VEHICLES

Kunimori Maruyama, Yokohama, Japan, assignor to Oscar Kogyo Kabushiki Kaisha, Tokyo-To, Japan

Filed June 22, 1971, Ser. No. 155,422
Claims priority, application Japan,
Int. Cl. B60l 11/14
U.S. Cl. 180—66 B **6 Claims**



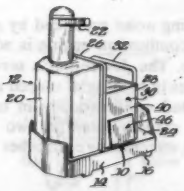
A system for electropneumatically propelling a vehicle comprises essentially a pneumatic motor and an electric motor. The pneumatic motor is driven by the air supplied under pressure from a source of compressed air such as a cylinder or a liquid-air tank, while the electric motor is driven by a storage battery in which is stored electrical energy produced by a generator, which is driven by a turbine operated by air supplied under pressure from the source of compressed air. Both the pneumatic motor and the electric motor are connected to transmission means linked to the driving wheels of the vehicle. The transmission means includes first and second differential means adapted for controlling the supply of air to the pneumatic motor and for causing the pneumatic motor to rotate in the same direction as a preselected rotational direction of the electric motor.

3,704,761

BATTERY SUPPORT ARRANGEMENT

Arthur M. Barrett, Jr., Lake Forest, Ill., assignor to Barrett Electronics Corporation, Northbrook, Ill.

Filed June 3, 1970, Ser. No. 42,933
Int. Cl. B62d 25/00
U.S. Cl. 180—68.5 **10 Claims**



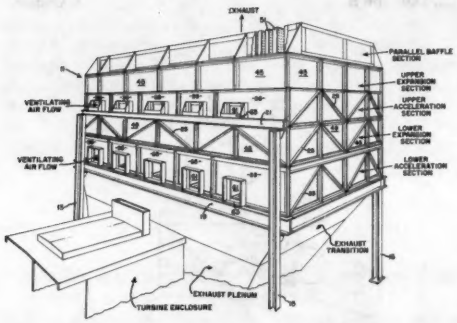
An arrangement for supporting and releasably retaining a battery and the like in centered position on a carrier including a base plate adapted to support a pair of opposed gate members each having first and second plate portions forming an acute angle therebetween, the gate members being pivotal between first positions adapted to receive a battery therebetween and second positions to center the battery and lockingly retain it between the gate members.

3,704,762

GAS TURBINE EXHAUST SILENCER AND SUPPORT

Thomas F. Smith, Greenville, S.C., and Richard E. Frederick, Ballston Lake, N.Y., assignors to General Electric Company

Filed Sept. 16, 1971, Ser. No. 181,002
Int. Cl. B64f *1/26*; F01n *1/10, 7/18*
U.S. Cl. 181—33 HB **8 Claims**



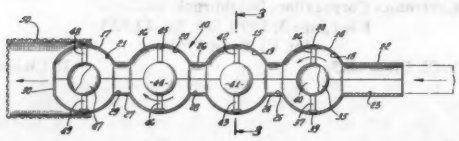
A free-standing, ventilated, gas turbine exhaust silencer which effectively reduces both high-frequency and low-frequency noise emissions. The silencer is supported on a structural frame adjacent to the exhaust end of a gas turbine. Two low-frequency silencing sections are each mounted on the structural frame in such a manner that they are free to expand and contract with temperature variations in order to avoid thermal stressing. A HIGH-frequency section is supported by the upper low-frequency station. The weight of said silencing sections is transferred to the structural frame by ventilated tunnels which pass through the said low-frequency sections and act as structural beams.

3,704,763

SILENCER

Richard B. Becker, 8534 Ocean View Ave., Whittier, Calif., and Clarence C. Chapman, 7860 Raviller Dr., Downey, Calif.

Filed Feb. 9, 1972, Ser. No. 224,857
Int. Cl. F01n *1/08, 7/02, 7/20*
U.S. Cl. 181—47 B **9 Claims**



A device for reducing noise produced by a relatively low-powered high speed combustion engine is adapted to be attached to the tailpipe. The device has a series of inter-connected spherical spaces in horizontal spaced alignment with a hollow sphere mounted concentrically in each space. The device is preferably manufactured in two complementary halves which are then attached to each other to complete the device.

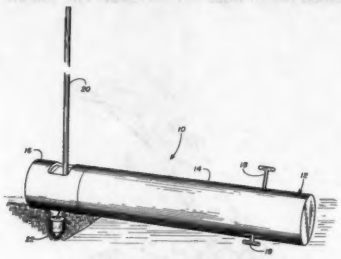
3,704,764

AIR DELIVERABLE SEISMIC SYSTEM

Harold B. Henderson, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 23, 1969, Ser. No. 887,555
Int. Cl. G01v *1/16*
U.S. Cl. 181—.5 VM **13 Claims**

An aerial delivery system includes a cylindrical container having blunt ends. One portion of the container houses an antenna and a seismic sensor. Another portion houses a pair of stabilizing feet and a motor for rotating the portions of the container relative to each other. In use, the container is dropped from an airplane, etc. Upon landing, the feet are extended and the orientation of the container is determined. Then, the one portion of the container is rotated until the antenna and the sensor are vertical. Finally, the antenna and the sensor are deployed.

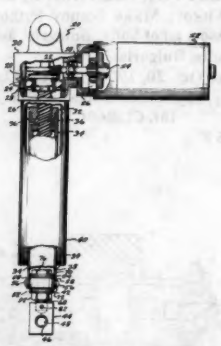


3,704,765

OVERLOAD CLUTCH

James Bruce Withrow, Charlotte, and Earl William Gardner, Concord, both of N.C., assignors to Duff-Norton Company, Inc., Charlotte, N.C.

Filed July 15, 1971, Ser. No. 162,943
Int. Cl. F16d *67/00*
U.S. Cl. 188—134 **17 Claims**



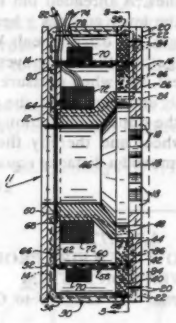
An overload clutch for a jack mechanism or the like located between a load and a travelling nut and protecting the motor and gearing against excessive torque development by allowing non-operating rotation of the nut when the applied torque exceeds the rotational restraint of the clutch. The clutch comprises a first component connected to the travelling nut through a tubular sleeve and having an axial bore through which a second component extends for non-rotatable attachment to a load therebeyond. The second component has a head on its inner end and a nut between its outer end and the first component, and pairs of Belleville spring washers are arranged in opposing concave face-to-face relation on the second component between the second component head end and the first component and between the nut and the first component, with the nut serving to compress the washers to provide frictional resistance therethrough and thereby apply the rotational restraint of the load to the travelling nut for load manipulating operation of the travelling nut while allowing frictionally resisted relative rotation of the travelling nut when the applied torque exceeds the frictional resistance of the compressed Belleville spring washers.

3,704,766

ELECTROMAGNETIC FRICTION COUPLING

Ralph L. Jaeschke, Kenosha, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 28, 1970, Ser. No. 101,698
Int. Cl. F16d 65/34
U.S. Cl. 188—164 12 Claims



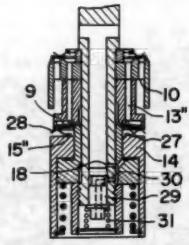
A brake mechanism for accurately positioning a member to be braked includes a first member and a second member rotatable relative to the first member. The first and second members have friction surfaces thereon which are engaged during braking of the members. A coil is provided for establishing a magnetic field having lines of flux which travel through a flux path, to thereby develop a braking torque between the first and second members. The first and second members each include a plurality of spaced apart magnetic conductive portions thereon through which the flux lines pass. When the conductive portions of the first and second members are aligned, the intensity of the flux lines in the flux path is maximized resulting in the frictional engagement of the first and second members and causing the rotation of the second member to be stopped at a predetermined position.

3,704,767

OIL-TYPE VIBRATION DAMPER

Tatsuya Takagi, 6-10, Araebisu-machi, Nishinomiya-shi, Hyogo-ken, Japan

Division of Ser. No. 738,281, June 19, 1968, Pat. No. 3,570,635. This application July 9, 1970, Ser. No. 53,548
Claims priority, application Japan, Dec. 11, 1967, 42/79345; Jan. 10, 1968, 43/1128; March 27, 1968, 43/19435
Int. Cl. F16f 9/348, 9/50
U.S. Cl. 188—280 3 Claims



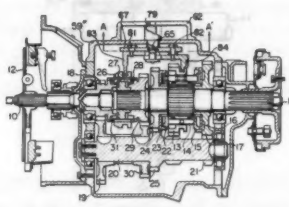
An oil-type vibration damper includes a piston and a cylinder, and either one or two sets of pressure control valves. With two sets of pressure control valves, one set effects damping of vehicles vibrations above supporting springs and the other set effects damping of vehicle vibrations below the supporting springs. When only one set of pressure control valves is used, this set effects damping of both vehicle vibrations, but with different response characteristics for each type of vehicle vibration. A pusher member detects changes in the frequency of vibrations to act automatically on either one pressure control valve or the single pressure control valve to either close the one pressure control valve or increase the resilient force on the single pressure control valve in accordance with the frequency of the vibrations.

3,704,768

SPEED CHANGER

Koichiro Hirozawa, and Shigeo Takahashi, both of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 2, 1970, Ser. No. 85,940
Claims priority, application Japan, Oct. 31, 1969, 44/87450; Oct. 31, 1969, 44/87451; Oct. 31, 1969, 44/87452; Oct. 31, 1969, 44/87453
Int. Cl. F16d 67/00
U.S. Cl. 192—3.57 8 Claims



This invention relates generally to a speed change gearing for a powered and wheeled vehicle, especially an aotomotive vehicle. More specifically, it relates to an intermittent control of the speed change gearing for transmitting power in the case of selective engagement of the gears contained therein.

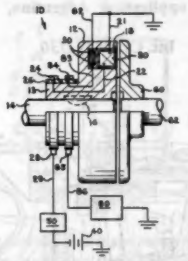
The improvement resides in the provision of such means adapted for interrupting the engagement of a clutch unit provided in the speed changer, by one and the same servo-pressure which is utilized for the actuation of the fork means to execute the on-off control of the clutch, so as to reduce otherwise invited time lag between the operation of fork servo and that of clutch servo to a possible minimum.

3,704,769

ONE-WAY TIME DELAY ELECTROMAGNETIC CLUTCH

Glenn S. Spencer, Horseheads, N.Y., assignor to The Bendix Corporation

Filed Sept. 21, 1971, Ser. No. 182,338
Int. Cl. F16d 27/06
U.S. Cl. 192—52 11 Claims



An electromagnetic clutch or brake including means for retarding or slowing the engagement or release of the armature is shown herein. An additional coil comprising one or more turns of high current capacity wire and at least one diode in series circuit relationship therewith is included within the mag-

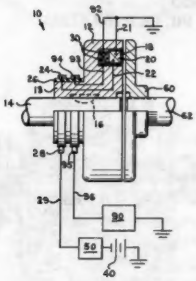
net body forming an electromagnetic coupling with the main coil in order to impede the generation or collapse of the main coil-induced electromagnetic field. Control means connected in series circuit relationship with the additional coil comprising at least one diode and a switch and located externally of the clutch may also be included so that application of the one-way magnetically retarding coil and diode means can be selective.

3,704,770

ADJUSTABLE TIME DELAY ELECTROMAGNETIC CLUTCH

Glenn S. Spencer, Horseheads, N.Y., assignor to The Bendix Corporation

Filed Sept. 21, 1971, Ser. No. 182,339
Int. Cl. F16d 27/06
U.S. Cl. 192—52 **9 Claims**



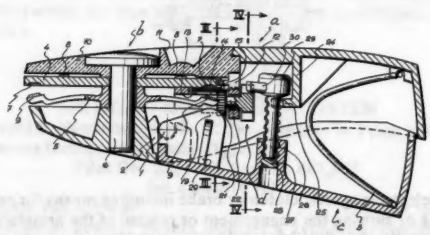
An electromagnetic clutch or brake including means for retarding or slowing the engagement and/or release of the armature is shown herein. An additional coil comprising one or more turns of high current capacity wire is included within the magnet body forming an electromagnetic coupling with the main coil in order to impede the generation and/or collapse of the main coil-induced electromagnetic field. A variable resistor or equivalent means is connected in series circuit relationship with the additional coil in order to selectively vary the amount of eddy current permitted to be induced in the additional coil, therefore providing means for regulating the response time of the armature to energization and deenergization of the primary coil. Control means connected in series circuit relationship with the additional coil and variable resistor comprising at least one diode and a switch may also be included so that application of the magnetically retarding coil can be selective and/or unidirectional.

3,704,771

MANUAL LABELING DEVICE

Francisco Barcelloni Corte, Ruta Panamericana Kilm, 26, 300, Buenos Aires, Argentina

Filed Aug. 20, 1971, Ser. No. 173,456
Claims priority, application Argentina, Jan. 28, 1971, 233699
Int. Cl. B41j 1/30
U.S. Cl. 197—6.7 **8 Claims**



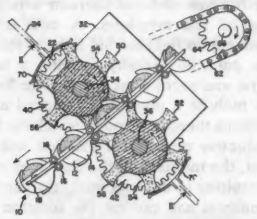
A labeling device for printing characters on a belt and the like. A body and a lever are pivotally connected with a spring normally urging them apart. A pair of closely arranged rotary members are provided with cooperating characters thereon having a space therebetween for receiving the belt on which the characters are to be imprinted by pressing. Means are provided for guiding the belt to the position between the rotary members for imprinting. A toothed wheel engages the belt to drive it in response to rotation of a drive wheel. The drive wheel is rotated only after the body and lever have been moved or pressed together. A threaded pin is rotatably and threadably received in the lever and has a head with an arm which operatively engages the drive wheel. When the lever and body are pressed together, the arm moves out of engagement with the drive wheel, and when pressure is released and the spring forces the body and lever apart, the pin and thereby the arm are pivoted in the opposite direction so as to engage and rotate the drive wheel and thereby the belt engaging wheel so that the belt is moved a distance equal to at least one character.

3,704,772

AMMUNITION FLOW PATH FIRE PROPAGATION PREVENTION SYSTEM

Otto H. Meier, Shelburne, Vt., assignor to General Electric Company

Filed Oct. 12, 1970, Ser. No. 79,931
Int. Cl. B65g
U.S. Cl. 198—1 **3 Claims**



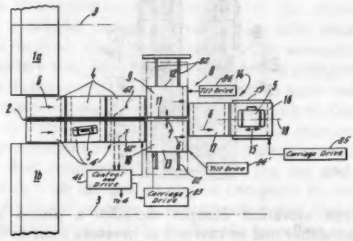
A continuously effective fire propagation barrier comprises a pair of counter-rotating baffle wheels disposed in an aperture in a stationary fire wall.

3,704,773

AIRPORT CHECK-IN COUNTER WITH BAGGAGE RECEIVING AND HANDLING FACILITY

Gerhard Lingg, Leimen, and Eberhard Hellermann, Morfelden, both of Germany, assignors to Mannesmann-Geisel GmbH. & Co., Mannheim, Germany

Filed Aug. 30, 1971, Ser. No. 176,070
Claims priority, application Germany, Feb. 26, 1971, P 21 10 132.6
Int. Cl. B65j 47/26
U.S. Cl. 198—1 **5 Claims**



A twin check-in counter having two counter desks and baggage receiving areas next to the counter desks and next to

each other, there being a pallet conveyor facility behind the counter to be shared by the two counters; in each receiving area begins a flight of conveyor belt for moving baggage towards the pallets; two belts are disposed behind the two flights of conveyor belts for tilting luggage on its side, they are laterally displaceable, to align either of them with the pallet conveyor facility.

3,704,774

APPARATUS, LIKE A STERILIZER, WITH A CONVEYOR

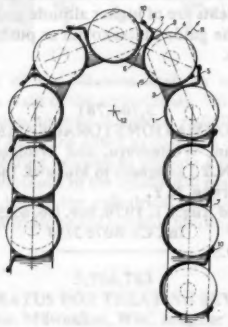
Johannes Bernardus Van der Winden, Amstelveen, Netherlands, assignor to Stork Amersterdam, Amstelveen, Netherlands

Filed Aug. 21, 1970, Ser. No. 66,031

Claims priority, application Netherlands, Aug. 26, 1969, 6912986

Int. Cl. B65g *17/12, 17/16*

U.S. Cl. 198—152 **2 Claims**



Sterilizers for e.g. tins of food, having a conveyor travelling in vertical loops and comprising two chains with carriers for supporting the tins therebetween. Each carrier is attached to two opposite chain links and has a trough-like shape with a discharge opening for the tins along its entire length.

In vertical portions and bottom curves of the conveyor's path these openings are barred by sideways protruding lips on edges of adjacent carriers. In the top curves the tins may be placed into or discharged from the carriers since the protruding lips give access to the opening of adjacent carriers due to the different angular position of the chain links.

3,704,775

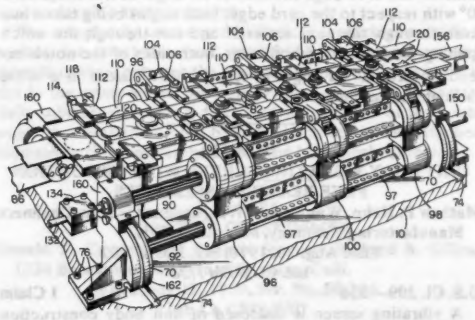
WORKPIECE TRANSFER MECHANISM

Frank C. Eickenhorst, Mason, Ohio, assignor to The Minster Machine Company, Minster, Ohio

Filed Sept. 14, 1970, Ser. No. 71,670

Int. Cl. B65g *25/04*

U.S. Cl. 198—218 **12 Claims**



The specification discloses a workpiece feeding device for advancing workpieces step by step from an incoming station into a plurality of work stations and then to an outgoing station. The device has frame members reciprocable in the direction of movement of the workpieces and movably carried by the frame members are workpiece engaging elements arranged in opposed relation and movable toward each other to engage workpieces and away from each other to release workpieces. The feeding device is particularly adapted for use with a mechanical press and is arranged to be driven by the press crankshaft so as to operate in timed relation to the movement of the press slide.

3,704,776

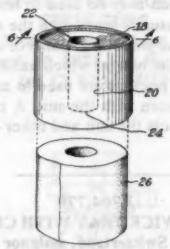
BATHROOM (HOUSEHOLD) ACCESSORY

Catherine A. Collins, 108 72nd St., Brooklyn, N.Y.

Filed June 26, 1970, Ser. No. 50,023

Int. Cl. A45c *11/00*

U.S. Cl. 206—1 R **1 Claim**



A cylindrical member closed at at least one end has an axial bore extending through the closed end and sealed off at a point adjacent the other end of the member. This structure can be used as a base with flowers disposed in the bore.

3,704,777

CONTAINER FOR MAGNETIZABLE ARTICLES

Eckhard Linnebuhr, deceased, late of Herne, Germany (by Karin Linnebuhr, heir), assignor to Arlac-Werk Heiko Ippen KG, Hamburg, Germany

Filed Aug. 12, 1971, Ser. No. 171,101

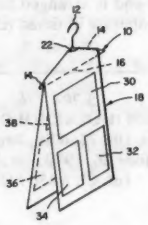
Claims priority, application Germany, Aug. 26, 1970, G 70 31 863.7

Int. Cl. A45c *11/00*

U.S. Cl. 206—1 R **10 Claims**

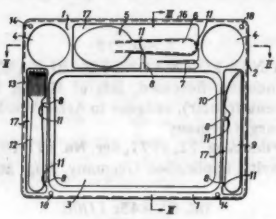
A container for storing and dispensing magnetizable articles such as paper clips, nails and the like, consisting substantially of a box shaped casing defining one or a plurality of chambers for receiving such articles. When more than one chamber is provided, adjacent chambers are separated by a dividing wall. Each chamber includes an opening, a curved guide surface extending from the opening towards the container interior and a bar magnet arranged below the guide surface.

3,704,778
GARMENT BAG
Richard Raschdorf, 15 Tidewater Avenue, Massapequa, N.Y.
Filed Sept. 18, 1970, Ser. No. 73,381
Int. Cl. B65d *85/18*
U.S. Cl. 206—7 **3 Claims**



A garment bag which may be used to hold a suit and other clothing accessories usually worn with the suit. It comprises a hanger for carrying the jacket and pants of the suit and a sheet of material covering the hanger which has a plurality of article holding pockets. The pockets are used to carry other items of clothing commonly worn with the suit. A covering which encloses the sheet protects the suit and other clothing from soiling.

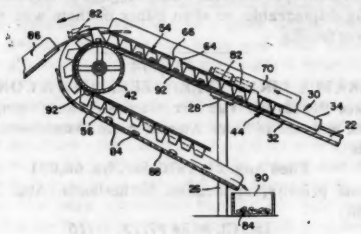
3,704,779
FOOD SERVICE TRAY WITH CUTLERY
Paul Nigg, Altstatten, Switzerland, assignor to Ego Werke AG, Altstatten, Switzerland
Filed Sept. 28, 1970, Ser. No. 76,091
Claims priority, application Switzerland, Jan. 30, 1970, 1320/70
Int. Cl. B65d *79/00, 83/00*
U.S. Cl. 206—47 R **8 Claims**



Throw-away food service tray made of plastic material, with integral break-off cutlery, the device comprising a substantially rectangular receptacle for containing food items, a knife, a fork and a spoon, the three cutlery pieces being protected by a surrounding reinforced frame and arranged so that they can easily be broken out by hand by the user.

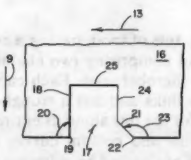
3,704,780
SEPARATOR-CONVEYOR
Samuel S. Aidlin, 214 Beaumont St., and Stephen H. Aidlin, 3855 Shore Parkway, both of New York, N.Y.
Filed June 24, 1971, Ser. No. 156,249
Int. Cl. B07c *5/06*
U.S. Cl. 209—73 **11 Claims**

A separator-conveyor for the product and scrap of blow-molding apparatus in which the product drops between spaced, upwardly and outwardly convergent guide plates onto the top of closely spaced flat, rigid cleats arranged in edge-to-edge relation longitudinally of an endless conveyor belt. The cleats have their top edges terminate short of the convergent edges of the guide plates and the blow molding products rest on top of the cleats and against the edges of the guide plates, the scrap dropping between the guide plates to each side of



the cleats. In one embodiment of the invention spaced, selected of the cleats are of higher altitude and extend into the space between the guide plates to act as pushers for the blow molded products.

3,704,781
INFORMATION STORAGE CARDS
John H. Lanahan, Whitesboro, and William W. Abraham, Utica, both of N.Y., assignors to Mohawk Industrial Laboratories, Inc., Vernon, N.Y.
Filed Aug. 11, 1970, Ser. No. 62,901
Int. Cl. B07c *5/34*
U.S. Cl. 209—80.5 **15 Claims**

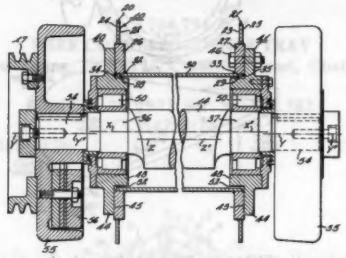


Information storage cards are provided with notches on an edge thereof at a location corresponding to information on the card. The notches are utilized for the selection of certain cards from a plurality of edge-aligned cards. According to the present invention, the notches have a novel configuration which facilitates separation of the desired cards. In a first embodiment, each notch is defined by a first side extending from a point at the card edge inwards at an angle of more than 90°, preferably 120° to 150°, with respect to the horizontal and by a second side extending from a point spaced from said first point on the card edge inwards at an angle of not more than 90° with respect to the card edge, both angles being taken in a sense through the card material and not through the notch opening. In another embodiment, both sides of the notch extend inwards at an angle of less than 90° taken in a sense through the card material.

3,704,782
UNIT BODY VIBRATING SCREEN WITH DISTORTION FREE BEARING ASSEMBLIES
Mathew P. Hahn, Wauwatosa, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Aug. 28, 1970, Ser. No. 67,832
Int. Cl. B07b *1/28*
U.S. Cl. 209—326 **1 Claim**

A vibrating screen is disclosed of unit body construction having a cylindrical vibrator housing welded on each end to vertical side walls of a screen body, to utilize the vibrator housing as a unitary part of the screen body. Bearing housing

assemblies fitted to journal ends of a vibrator shaft in the housing, are provided with a collar connected to outer surfaces of the side walls around apertures defined therein in register with the cylindrical vibrator housing. Back bearing housing is provided with a cylindrical portion projecting along the central axis of the collar, inward of the adjacent side wall and into the adjacent end of the cylindrical vibrator housing to extend

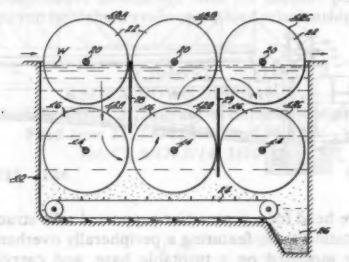


bearing support of the vibrator shaft to within the space between the side walls of the screen body. The cylindrical portion of the bearing housing is spaced radially inward of the vibrator housing along the entire axial length of the cylindrical portion of the bearing housing to provide a clearance around the entire circumference of the cylindrical portion of the bearing housing and isolate the cylindrical portion of the bearing housing from distortion of the vibrator housing.

3,704,783
APPARATUS FOR TREATING SEWAGE

Ronald L. Antonie, Milwaukee, Wis., assignor to Autotrol Corporation, Glendale, Wis.

Filed June 17, 1970, Ser. No. 46,968
Int. Cl. C02c *1/10*
U.S. Cl. 210—151 **7 Claims**



A waste water treatment apparatus and method in which completely submerged movable biological contactors, such as rotating disks, are used to provide biological treatment of waste water in a treatment tank.

The completely submerged biological contactors provide a surface for attachment and growth of microorganisms and provide contact between the attached biomass and the impurities in the waste water. Suitable aerating means, such as partially submerged rotating disks, provide aeration of the waste water to maintain aerobic biological activity in the attached biomass on the completely submerged biological contactors.

3,704,784
FLOATING OIL SKIMMER

Donald E. Craggs, 223 Burnett St., and Richard S. Gillen, 1330 Beachmont St., both of Ventura, Calif.

Filed July 27, 1970, Ser. No. 58,364
Int. Cl. C02b *9/02*
U.S. Cl. 210—242 **8 Claims**

A floating oil skimmer for recovering oil from the surface of a body of water is disclosed. The skimmer is comprised of an elongated, box-like skimming unit having an open front equipped with an adjustable inlet lip, an oil and water separation zone, adjustable oil overflow weir, an oil collection sump,

and a water outlet gate. A buoyant pontoon section is removably attached at each side of the skimming unit to render the apparatus buoyant. The pontoon sections are easily detachable to facilitate land transport of the device.

3,704,785
WATER SOFTENER DEFLECTOR-DISTRIBUTOR STRUCTURE

Robert E. Marsh, 12200 Montecito Road, Seal Beach, Calif.

Filed Sept. 15, 1971, Ser. No. 180,738
Int. Cl. B01d *23/10*
U.S. Cl. 210—285 **21 Claims**

There is provided, in association with the collector-distributor tube of a water softener tank, a baffle or deflector member for conforming to an ideal pattern the distribution of liquid flowing from perforations at the perforated end of the tube that is immersed in a bed of ion-exchange resin in the tank. The deflector is positioned adjacent to the uppermost of the perforations in the tube and is apertured to permit some flow-through of liquid emerging from the tube through the perforations, while revertively deflecting a portion of the liquid to cause it to spread and flow generally uniformly through the bed of resin instead of channeling in close proximity to the tube in its flow toward the other end of the tank.

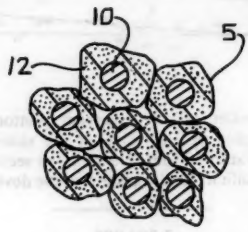
3,704,786
PARTICULATE FILTER MEDIA HAVING A GRADIENT OF REMOVAL RATINGS

Marc Lerner, Swan Lake, N.Y., and Giora Erlich, 220 West Jersey St.

Filed Aug. 30, 1971, Ser. No. 176,182
Int. Cl. B01d *23/10*
U.S. Cl. 210—290 **7 Claims**

A particulate filter bed in which the particles define a generally uniform gradient of removal ratings of decreasing coarseness from top to bottom, and a method of producing the filter particles therefor are provided. The bed comprises a

multiplicity of particles of uniformly decreasing size and increasing specific gravity from top to bottom. The particles have cores of approximately equal size and specific gravity and outer coatings of varying thicknesses, but equal specific gravity. The specific gravity of the outer coating is substantially less than the specific gravity of the core, so that the overall specific gravity of the larger particles is less than that of the smaller particles. The method comprises encapsulating the higher specific gravity core material with lesser specific gravity material by spray coating or the like.



3,704,787

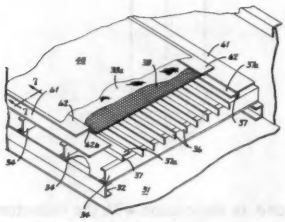
SEAL FOR DISPOSABLE MEDIA FILTER APPARATUS

Orien K. Norton, 2011 Elizaville Road, Lebanon, Ind.

Filed Nov. 23, 1970, Ser. No. 91,881

Int. Cl. B01d *33/00*

U.S. Cl. 210—387 **6 Claims**



A filter apparatus in which a sheet of disposable filter media is moved by a carrier belt over the open top of a tank subjected to sub-atmospheric pressure, with liquid to be filtered disposed on the top face of the filter media to be drawn therethrough into the tank, and having seals formed at the side margins of the carrier belt and travelling with the belt to maintain the sub-atmospheric pressure in the tank.

3,704,788

SEWAGE TREATMENT SYSTEM

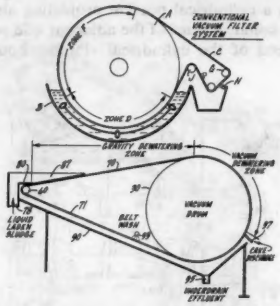
Brian L. Goodman, and Robert B. Higgins, both of Overland Park, Kans., assignors to Ecodyne Corporation, Chicago, Ill.

Filed Jan. 11, 1971, Ser. No. 105,189

Int. Cl. B01d *33/14*

U.S. Cl. 210—401 **6 Claims**

A concentrator system having a large diameter vacuum drum over which an endless filter media screen is trained. The endless screen has an overall length substantially greater than the circumference of the drum and is trained over an idle roller horizontally displaced from the drum. Solid containing liquid slurry or sludge is flowed onto the generally horizontal upper reach of the screen adjacent the roller by horizontal feed. As the screen carries the slurry or sludge away from the feed end, gravity filtering of liquid through the screen takes place. When the screen passes over the drum, vacuum dewatering further reduces the liquid content.



3,704,789

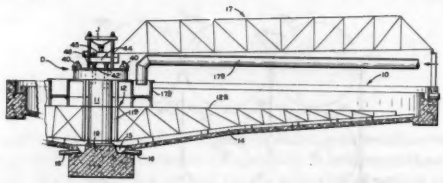
CONTINUOUS SEDIMENTATION TANK WITH CENTER-PIER SUPPORTED SEDIMENT RAKING APPARATUS

Theodore M. Jablon, Stamford, Conn., and Russell C. Raynor, South Salem, N.Y., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Continuation of Ser. No. 748,893, June 21, 1968, abandoned, which is a continuation-in-part of Ser. No. 537,170, March 24, 1966, abandoned. This application Sept. 8, 1969, Ser. No. 856,054

Int. Cl. B01d *21/12*

U.S. Cl. 210—531 **32 Claims**



A drive head for a center pier-supported rake structure in a sedimentation tank, featuring a peripherally overhanging top structure mounted on a turntable base, and carrying drive means for an externally toothed bull gear connected to the rake structure, and supported for rotation on the turntable base below said overhanging top structure.

3,704,790

NECKTIE RACK

Salvatore J. Rock, 1809 Brickell Avenue, Apt. 417, Miami, Fla.

Filed Sept. 3, 1970, Ser. No. 69,400

Int. Cl. A47f *7/00*

U.S. Cl. 211—13 **2 Claims**

A necktie rack having a plurality of removeable legs, each leg for supporting a necktie and anchored through a cylindri-

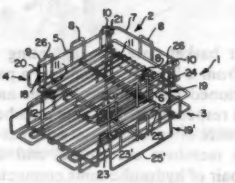
cal aperture in an elongated supporting rack, each leg having a first end portion, a middle portion and a second end portion, said first end portion engaged through said aperature, said middle portion for receiving and supporting a necktie and said second end portion resiliently in contact with said first end portion, thereby removeably locking said leg to said supporting rack.

3,704,791

WIRE CORRESPONDENCE TRAY

Ira Bruce Young, Jr., 4215 Cromwell Road, Chattanooga, Tenn.

Filed Feb. 24, 1971, Ser. No. 118,382
Int. Cl. A47f *3/14, 5/01*
U.S. Cl. 211—126 **3 Claims**



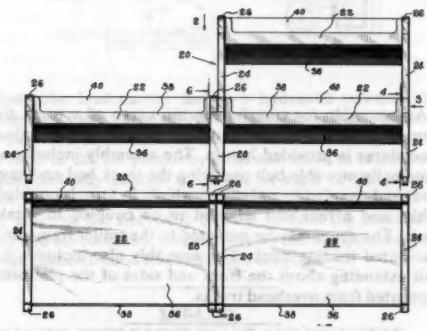
A wire correspondence tray which is economically manufactured from strong wire and which includes a bottom, opposite sides, a back, and support means extending downwardly from opposite sides of the tray, said support means comprising a brace for the side portions of the tray and being flared downwardly and outwardly from the plane of the sides of the tray whereby a plurality of trays may be stacked one upon the other without creating stresses in the support portions of the tray. Detent means are provided in the side portions of the tray for cooperative association with the support portion of another tray to hold the trays in assembled relationship.

3,704,792

KNOCK-DOWN DISPLAY

Lee R. Wiese, Tenafy, N.J., assignor to Henschel-Steinau, Inc.

Filed June 21, 1971, Ser. No. 154,872
Int. Cl. A47f *3/14, 5/10*
U.S. Cl. 211—126 **8 Claims**



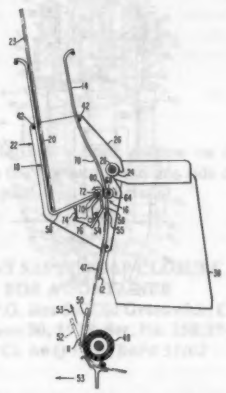
A knock-down display having a product supporting tray and combined end supports and legs which mate with and support the tray at three points so that a vertically stacked assembly and/or an end to end linear relationship of a plurality of trays may be formed. Each of the combined side supports and legs mates with the tray at three points to thereby provide a rigidly supported structure.

3,704,793

SHEET STACKING DEVICE

Edward A. Nicol, Farmington, and Harold M. Frederick, Birmingham, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed April 2, 1971, Ser. No. 130,583
Int. Cl. B65h *31/22*
U.S. Cl. 214—7 **9 Claims**



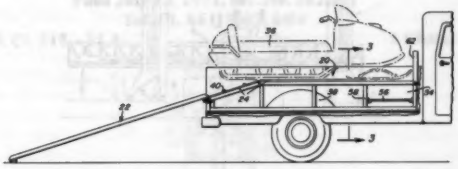
A sheet stacking device for serially stacking sheets in a substantially upright position where sheet ejection means impels a sheet upwardly into a vertically disposed sheet retainer. A sinuous guide opposingly displaced from the sheet retainer directs the sheet into engagement with the injecting means and assists in displacing the sheet securely into the sheet retainer by deflecting and bending the sheet in a predetermined degree and direction.

3,704,794

VEHICLE MOUNTED EQUIPMENT DECK AND RAMP

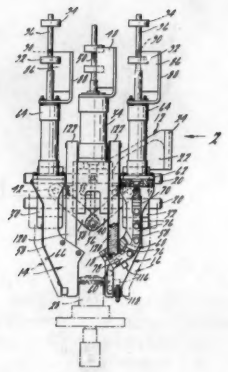
James R. Flamm, 227 East Main, Rexburg, Idaho

Continuation-in-part of Ser. No. 12,193, Feb. 18, 1970, Pat. No. 3,613,920. This application Nov. 17, 1970, Ser. No. 90,328
Int. Cl. B65g *67/02*
U.S. Cl. 214—85 **10 Claims**



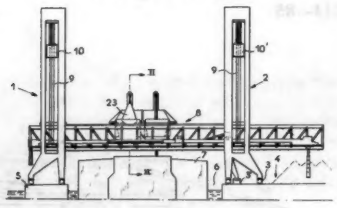
A support deck selectively mountable within a pickup truck box so as to define an elevated platform over the wheel well covers whereby the full width of the box can be utilized for the accommodation of snowmobiles or the like. The deck, either in its entirety or along the rear portion thereof, slopes downwardly so as to facilitate the movement of snowmobiles thereon and therefrom. Access to the rear of the deck is provided by means of a removable inclined ramp.

3,704,795
REINFORCEMENT DISPENSING MECHANISM
Norman S. Loren, Livonia, and Theodore L. Porter, Sterling Heights, both of Mich., assignors to Enterprise Machine Products Corporation, Mt. Clemens, Mich.
Filed May 18, 1971, Ser. No. 144,460
Int. Cl. B65g 59/06
U.S. Cl. 214—8.5 F 10 Claims



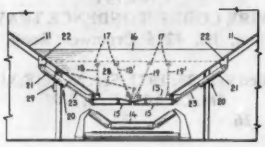
A mechanism for dispensing and accurately positioning metallic reinforcing elements within a mold cavity of an automatic casting machine in appropriate timed relationship relative to the mold assembly cycle.

3,704,796
PLANT FOR UNLOADING AND HANDLING LOOSE SOLID MATERIAL
Pierre de Demandolx Dedons, Dunkerque; Gerard Giroud, Petite Synthe, and Daniel Delaunay, Dunkerque, all of France, assignors to Port Autonome de Dunkerque, Dunkerque, France
Filed July 22, 1970, Ser. No. 57,146
Claims priority, application France, July 25, 1969, 6925466; Nov. 7, 1969, 6938408; Nov. 20, 1969, 6939896; Nov. 21, 1969, 6940051
Int. Cl. B65g 63/00
U.S. Cl. 214—14 40 Claims



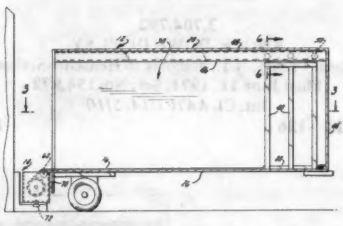
A handling apparatus for transferring loose solid material between a ship, a railroad truck or the like and a stocking area and conversely comprising a beam shiftable vertically or obliquely between two uprights so as to span a wet dock or other operative area. The beam carries longitudinally a conveyor feeding a bucket or two buckets operating alternatingly and moving along a vertical path without any lateral shifting, this being allowed by a tiltable part such as a sloping plane which is brought out of a vertical inoperative position into registry with the bucket in its upper position so as to dump the material dropping out of the bucket into a hopper feeding further conveyors.

3,704,797
BULK MATERIAL DISCHARGING ARRANGEMENT
Matthieu Suykens, 87 North Park Gardens, Belleville, Ontario, Canada
Continuation of Ser. No. 842,535, July 17, 1969, abandoned.
This application May 24, 1971, Ser. No. 146,425
Int. Cl. B65g 67/58
U.S. Cl. 214—15 D 7 Claims



An equalizer basket gate for regulating the discharge of bulk material from a hopper, comprises a pair of similar gate members positioned beneath the hopper and arranged symmetrically with respect to it. The gate members are suspended so that the pressure of bulk material on them tends to open the gate. The gate members are closed, and restrained against opening, by a pair of hydraulic rams connected in parallel to a pressure fluid supply. A mechanical locking device is also provided for holding the gate members in the closed position.

3,704,798
TRUCK CARGO TRANSFER ASSEMBLY
Herbert L. Carpenture, Jr., Babylon, N.Y., and Oscar Green, Worthington, Ohio, assignors to Greif Bros. Corporation, Delaware, Ohio
Filed Feb. 3, 1971, Ser. No. 112,124
Int. Cl. B60p 1/38
U.S. Cl. 214—38 D 5 Claims

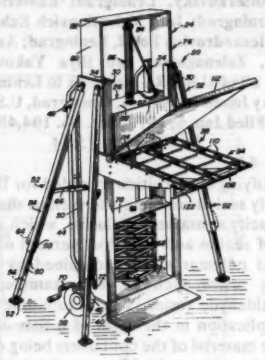


An assembly for transferring the cargo of a truck to and from the truck front portion during loading and unloading procedures is provided herein. The assembly includes a longitudinally movable belt overlying the truck bed and having a front end coupled to a platform which, in turn, is coupled to a cable, and a rear end adapted to be coupled to a take-up drum. The drum may be mounted to the trailer frame or to an associated loading dock. The assembly also includes a cage unit extending about the front and sides of the platform and supported from overhead tracks.

3,704,799
HANDTRUCK HOIST
Carton M. Morris, Jr., 4033 Tulane Drive, Kenner, La.
Filed Dec. 23, 1970, Ser. No. 101,023
Int. Cl. B62b 1/12
U.S. Cl. 214—370 12 Claims

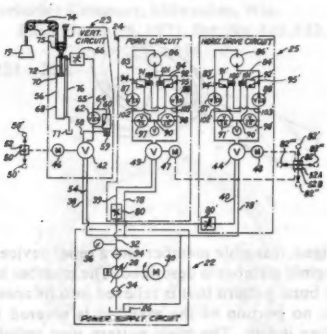
A two wheel mobile handtruck incorporating laterally extensible stabilizing legs and first and second hoist sections in-

cluding a primary screw jack actuated section and a secondary block and tackle section for selectively elevating a projecting



load platform. The load platform can alternately present a roller surface or a panel surface.

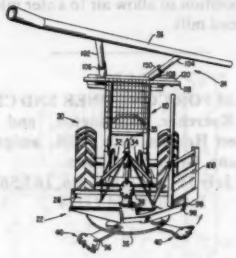
3,704,800
HYDRAULIC LOAD CARRIER
Paul E. Redelman, South Holland, Ill., assignor to Interlake Steel Corporation
Filed April 21, 1970, Ser. No. 30,452
Int. Cl. B66f *9/14*
U.S. Cl. 214—730 **13 Claims**



A hydraulic load carrier having a hydraulic powered lift platform, forks and horizontal drive includes variable proportional flow valves to variably control the flow of hydraulic power fluid to the lift platform, forks and drive to selectively and independently control the speed of each of these components. Velocity and acceleration means may be provided in one or more of the hydraulic circuits to limit the maximum velocity and acceleration, respectively, of the components and to prevent uncontrolled free fall of the lift platform.

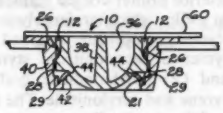
3,704,801
FALLING TREE CONTROLLER AND IMPROVED MOWER CUTTING DEVICE
Eugene V. Stair, Box 238, Caddo, Okla.
Filed Nov. 4, 1970, Ser. No. 86,735
Int. Cl. A01g *23/02*
U.S. Cl. 144—34 A **26 Claims**

A mowing apparatus including rotating cutter assemblies having replaceable cutter plates each formed with a number of saw teeth, with the teeth being arranged in groups or sets on different cutting diameters. The cutter mechanism has a housing with specific structure which cooperates with a directional



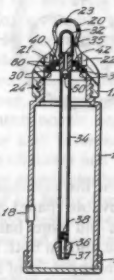
falling tree controller and a hook section on the cutter assembly to discharge the cut material to one side of the mowing apparatus out of its path of advancement.

3,704,802
CHILD RESISTANT SAFETY CAP CLOSURE ASSEMBLY FOR A CONTAINER
Robert S. Schultz, P.O. Box 56, Old Greenwich, Conn.
Filed June 30, 1971, Ser. No. 158,274
Int. Cl. A61j *1/00*; **B65d** *55/02*
U.S. Cl. 215—9 **8 Claims**



A cap closure and peripheral neck for any container which is child resistant since it requires a combination downward and twisting motion to either open or close the cap closure. A sloping camming surface in the peripheral groove portion of the cap assists in the closing action. The cap may be provided with a finger tab that projects upwardly from a dished central portion of the cap closure, thereby making it more difficult for children to grasp and open and close the cap closure. A resilient flange on either the cap or container biases said cap in an upward direction. An abutment stop in the neck portion prevents overstressing the resilient flange and indicates when to rotate on opening. A vertical stop in cap indicates when cap is ready to be totally removed.

3,704,803
NURSING BOTTLE
Charles L. Ponder, 694 Concordia, St. Paul, Minn.
Filed July 13, 1971, Ser. No. 162,231
Int. Cl. A61j *9/02*, *9/04*
U.S. Cl. 215—11 A **5 Claims**



A baby nursing bottle having inner and outer nipples each connected through special valving means to opposite ends of

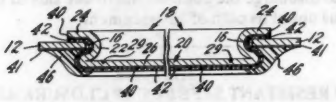
the nursing bottle so as to permit an adequate flow of milk irrespective of the position of the bottle. The special valving means comprise small flexible flaps disposed in the direction of flow of fluid. Similar valve means are incorporated into the outer nipple in a position to allow air to enter into the bottle to replace the displaced milk.

3,704,804

PLASTIC FILM FOR CONTAINER END CLOSURES

Ralph William Kaercher, Barrington, and John Ralph Peschke, Prospect Heights, both of Ill., assignors to American Can Company, Greenwich, Conn.

Filed July 19, 1971, Ser. No. 163,569
Int. Cl. B65d *17/24*
U.S. Cl. 220—53 **45 Claims**



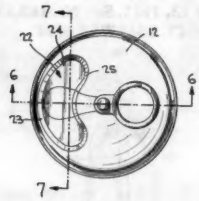
An improvement in a container end closure having a central panel and which can have secured to it within an aperture therein, a substantially rigid plug having a tear-out portion defined by score lines, the improvement which comprises including on the interior primer-coated surface of the container end and/or plug, a film which preferably is an unplasticized acrylic multipolymer comprising a blend of (1) a hard resinous terpolymer of acrylonitrile, styrene and methyl methacrylate, and (2) polybutadiene grafted with methyl methacrylate, styrene and acrylonitrile. The film can also be a hard, unplasticized thermoplastic comprising from about 85 to 100 percent polyvinyl chloride and from about 15 to 0 percent polyvinyl acetate. The film isolates the closure or plug metal from the container product and prevents corrosion of the metal and consequent contamination of the product. The acrylic multipolymer film can be applied in a single pass as a direct extrusion coating or film lamination.

3,704,805

BEVERAGE CONTAINER HAVING INTEGRAL FORMED LIP GUARD

Edward A. Sheafe, III, 6935 Columbia Drive, Alexandria, Va.

Filed May 7, 1970, Ser. No. 35,474
Int. Cl. B65d *17/20*
U.S. Cl. 220—54 **1 Claim**



A beverage container of the easy-opening type has an end panel including a removable panel portion formed by a peripheral score line. The end panel has a concave portion extending into the score line and on both sides of the removable panel portion to enable an upper lip of a person drinking from the container to extend into the concave portion. The concave portion of the end panel facilitates drinking from the container.

3,704,806

DEHUMIDIFYING COMPOSITION AND A METHOD FOR PREPARING THE SAME

Tikhon Grigorievich Plachenov, Leningrad; Grigory Markovich Belotserkovsky, Leningrad; Ekaterina Nikolaevna Dolgova, Leningrad; Jury Valentinovich Ezhov, Leningrad; Vladimir Alexandrovich Fogel, Leningrad; Andrei Pavlovich Benediktov, Zelenogorsk, and Iliya Yakovlevich Avilov, Leningrad, all of U.S.S.R., assignors to Leningradsky Tekhnologichesky Imeni Lensoveta, Leningrad, U.S.S.R.

Filed Jan. 6, 1971, Ser. No. 104,480
Int. Cl. B65d *25/14*
U.S. Cl. 220—64 **8 Claims**

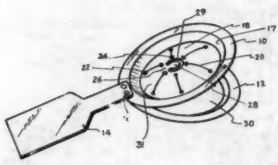
A dehumidifying composition intended for the dehydration of hermetically sealed containers of various shape and capacity, small-capacity containers inclusive, which contains 20–60 wt. percent of zeolite and 40–80 wt percent of thermosetting polymer. Said polymer may be obtained by curing diverse thermosetting resins such as, for example, epoxide and phenol-formaldehyde resins. The dehumidifier of the invention finds application in the form of a film or coat strongly bonded to the material of the containers being dehydrated and no special means are required for securing it in the containers used in conjunction with diverse semiconductor devices and instruments.

3,704,807

SAFETY RELIEF DEVICE

Robert J. Lidgard, Hacienda Heights, Calif., assignor to Ametek, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 881,234, Dec. 1, 1969. This application March 8, 1971, Ser. No. 121,695
Int. Cl. B65d *25/00*
U.S. Cl. 220—89 A **8 Claims**



A pre-bulged, frangible member and a relief device employing the frangible member is described. The member has a predetermined burst pattern that is relieved into its crown which insures that no portion of the member is severed from the member when it fails. The basic pattern uses radial slits extending from the periphery of the crown and terminating short of the center. The center portion of the crown is relieved with a pattern employing at least one non-rupturable, interconnecting web between the apex and the remainder of the member so that, on failure, this web retains the apex of the crown.

3,704,808

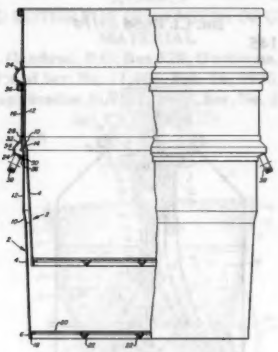
RIM LIFT BINS

Charles I. Gibson, Moorestown, N.J., and Wayne A. Maley, Moon Township, Allegheny County, Pa., assignors to United States Steel Corporation

Filed Dec. 9, 1970, Ser. No. 96,495
Int. Cl. B65d *21/02, 7/44*
U.S. Cl. 220—97 C **10 Claims**

A rim lift bin has a main body member substantially rectangular in horizontal section. The body member has a relatively long bottom tapered section tapering outwardly and upwardly, a relatively short intermediate tapered section above the bottom tapered section which tapers upwardly and outwardly at an angle greater than the bottom tapered section, a first verti-

cal section connected to the top of the intermediate tapered section, an upper tapered section connected to the top of the first vertical section, and a second vertical section extending upwardly from the upper tapered section. A channel rim



member having a bottom leg extending upwardly and outwardly at a slight angle, a top leg and a vertical base connecting the legs is fastened to the main body member above the center of gravity of the bin. This arrangement permits nesting and easy handling of the bins.

3,704,809

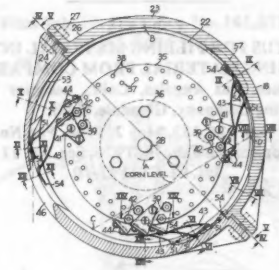
PLATELESS PLANTER

Alvin L. Cleek, Laporte, Ind., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed March 18, 1971, Ser. No. 125,532

Int. Cl. A01c *7/04*

U.S. Cl. 221—220 **8 Claims**



A plateless planter wherein rotating fingers pick up seeds, move them in adjoining parallel grooves in the periphery of the drum surrounding the fingers to a joint where a single opening is positioned between grooves for receiving the seeds from the rotating fingers.

3,704,810

AUTOMATIC COP FEEDER

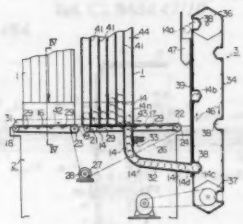
Shozi Sakai, Kyoto, Japan, assignor to Murata Machinery, Ltd., Kyoto, Japan

Filed June 24, 1971, Ser. No. 134,828

Int. Cl. B65h *5/02*

U.S. Cl. 221—236 **12 Claims**

Automatic cop feeder used in combination with bottomless type cop containers containing cops in prescribedly defined multiple columns wherein cops are delivered from said container into a cop shooting tunnel intermittently from column to column with a help by a feeler disposed to the tunnel and



thusly delivered cops are transported one by one towards next operational station such as a rewinding part from the shooting tunnel through a conveyer tower located in connection with an outlet end of the shooting tunnel.

3,704,811

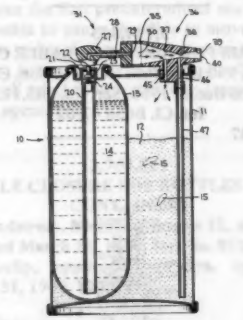
PORTABLE SANDBLASTER

Joseph T. Harden, Jr., Richmond, Va., assignor to Creative Ideas, Inc., Richmond, Va.

Filed July 24, 1970, Ser. No. 58,093

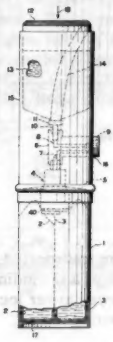
Int. Cl. B05b *7/32*

U.S. Cl. 222—4 **16 Claims**



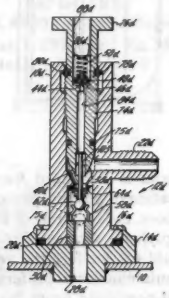
Particulate material is dispensed from a portable supply container by application of positive pressure in the open space of the container above the material to fluidize the same, and simultaneously, applying a vacuum through a venturi nozzle. The pressurized fluid for feeding the venturi nozzle and for fluidizing the particulate material preferably originates from a single source, a self-contained propellant tank positioned inside the supply container. An expansion chamber is provided at one end of the venturi nozzle and a dispensing orifice is positioned at the other end. Interconnecting transfer means between the expansion chamber and the open space may be a restricted passage or an open interface; in the latter embodiment a stream splitting lip being formed by said one end of said nozzle. A modified embodiment may be operated in either the upright or inverted position by providing alternative dispensing apertures in the top of the supply container for cooperation with a coupling stopper; sealing and transfer stoppers being positioned to automatically close off the unused aperture and supply pressure to the open space of the container.

3,704,812
MULTI-COMPONENT DISPENSER AND VALVE
Jean Marand, Norwalk, Conn., assignor to Ciba-Geigy Corporation, Town of Greenburgh, N.Y.
Filed June 29, 1970, Ser. No. 50,394
Int. Cl. B65d *83/14*
U.S. Cl. 222—136 23 Claims



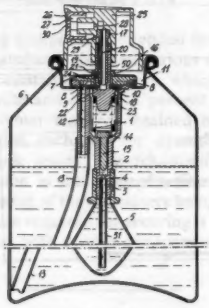
A dispenser includes a container enclosing several fluid components in isolated sac chambers. The chambers communicate through a valve with at least one passage in a coupler-aspirator. An aerosol propellant cartridge with a valve couples with another passage in the coupler-aspirator. The valve includes a stationary stem and a movable stem member. The sac chambers have adaptors which communicate with the valve. The adaptors may be unitary or individual.

3,704,813
VALVE SYSTEMS FOR NON-REFILLABLE CONTAINERS
George C. Devol, 990 Ridgefield Road, Wilton, Conn.
Filed Dec. 8, 1969, Ser. No. 883,122
Int. Cl. B65d *47/02*
U.S. Cl. 222—147 10 Claims



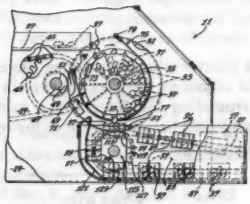
Several forms of valve assembly, to be secured permanently to a container, enable one-time-only filling of the container, for avoiding dangerously refilled containers. The valve assembly has a shut-off valve for controlling fluid dispensing. In some forms, the shut-off valve converts the assembly to its non-fillable condition as a consequence of the first closing operation of the shut-off valve. There may be an initially inactive check valve that allows the container to be filled and becomes a discharge-only check valve, or a check valve in a dispensing passage may have a parallel filling passage that is blocked after one use.

3,704,814
VALVE FOR DISPENSING TWO DISTINCT LIQUIDS FROM AN AEROSOL CONTAINER
Tomaso Ruscitti, Milan, Italy, assignor to Coster Tecnologie Speciali S.p.A., Milan, Italy
Filed July 13, 1971, Ser. No. 162,211
Claims priority, application Italy, July 15, 1970, 27443 A/70
Int. Cl. B65d *83/14*
U.S. Cl. 222—145 6 Claims



A valve applicable to an aerosol container of the type containing two liquids, one of which in the container and the other of which in a deformable vessel in turn enclosed within the container. The valve is capable of dispensing the two liquids separately for supply thereof to a dispensing cap where said liquids are intermixed. The valve comprises a hollow body, in which a first hollow extension projects and on which a deformable vessel containing one of said liquids is carried. The valve comprises a second hollow extension communicating with a chamber connected to a further chamber by a duct which, under inoperative conditions, is closed by a seal pressed by a flange projecting the valve stem on which a spring is operative. In the stem, two longitudinal conduits are provided, at the lower end of which in the stem two distinct small holes are provided and located above said seal.

3,704,815
APPARATUS FOR FILLING MATERIAL INTO AND DISCHARGING MATERIAL FROM COMPARTMENTS
Robert F. Jones, Los Angeles, Calif., assignor to Hoffman Manufacturing Company, Glendale, Calif.
Division of Ser. No. 726,153, May 2, 1968, Pat. No. 3,495,550.
This application Feb. 16, 1970, Ser. No. 11,658
Int. Cl. G01f *11/10*
U.S. Cl. 222—368 3 Claims



A method and machine for making a coated candy cluster. In a preferred form of the invention, the machine includes a rotatable rotor having a plurality of compartments. The rotor rotates the compartments between a filling station in which cluster material is deposited in the compartments and a discharge station at which the cluster material is discharged from the rotor onto a conveyor. Metoring means responsive to

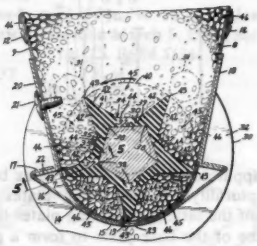
rotation of the rotor control the amount of cluster material deposited in each of the compartments. The conveyor conveys the discharge cluster material to an enrober which coats the cluster material with chocolate or other suitable coating material.

3,704,816

FEEDING ROTOR FOR DISPENSERS OF GRANULAR MATERIAL

Ebenhard S. Gandrud, P.O. Box 528, Owatonna, Minn.

Continuation of Ser. No. 11,406, Feb. 16, 1970, abandoned. This application Nov. 17, 1971, Ser. No. 199,814
Int. Cl. G01f *11/24*
U.S. Cl. 222—368 11 Claims



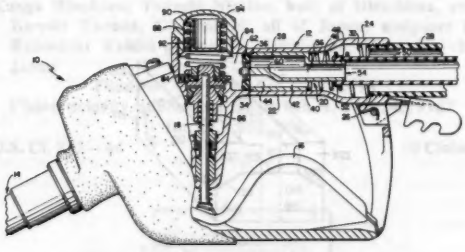
A spreading machine including an elongated dispensing rotor having a rigid axial shaft and an elongated body of elastomeric material covering the shaft in axially inwardly spaced relation to the ends of the shaft, the body including a plurality of generally radial vanes extending longitudinally of the shaft, each of the vanes having opposite sides converging generally radially outwardly to define a longitudinally extending flexible feather edge.

3,704,817

CARTRIDGE INSERT FOR A DISPENSING NOZZLE

Paul R. Wilder, Cincinnati, Ohio, and Donald L. Smallwood, Fort Mitchell, Ky., assignors to Dover Corporation, New York, N.Y.

Filed July 12, 1971, Ser. No. 161,571
Int. Cl. B67d *3/00*
U.S. Cl. 222—482 10 Claims



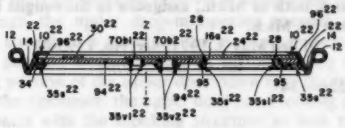
A fluid dispensing nozzle cartridge for providing two fluid paths through two separate passages extending through the cartridge supported in a passage in the nozzle body is disclosed. The cartridge has a valve supported at the outlet end of the passages with the valve having a separate portion controlling each of the passages. When there is flow through only one of the passages in the cartridge, the portion of the valve cooperating therewith is opened by the fluid flow and the portion of the valve cooperating with the other passage is biased closed to insure that there is no significant leakage from the nozzle into the passage in the cartridge not having pressurized fluid supplied thereto.

3,704,818

CAN END WITH BONDED SEAL SLIDES

Donald L. Douty, Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation

Division of Ser. No. 146,945, May 26, 1971, which is a division of Ser. No. 61,384, Aug. 5, 1970, Pat. No. 3,622,055. This application Jan. 28, 1971, Ser. No. 221,600
Int. Cl. B65d *47/10*
U.S. Cl. 222—484 41 Claims



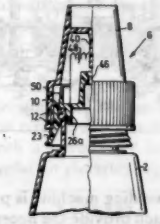
A can end is provided with an opening and a can end sealing portion. A slide is disposed against the can end adjacent the opening. A stationary member is disposed against the slide and is provided with a pour opening and a stationary member sealing portion. The slide has a slide sealing portion adjacent the pour opening and is movable to a sealing position where the pour opening is covered by the slide. The pull tab has a connection to the slide. Engaging means engage the can end and one of the slide and the stationary member to position the stationary member sealing portion adjacent the can end sealing portion, and to press the slide sealing portion against the stationary member adjacent the pour opening. A pressure barrier material seals the can end sealing portion to the stationary member sealing portion and the slide sealing portion to the stationary member adjacent the pour opening. The pressure barrier material is bonded to the stationary member adjacent the pour opening with a first predetermined shear strength and to the slide sealing portion with a second predetermined shear strength less than the first predetermined shear strength. The pull tab is movable to cause the slide to move away from the sealing position to break the bond between the slide sealing portion and the pressure barrier material adjacent the pour opening. The pull tab then is movable to cause the slide to uncover the pour opening.

3,704,819

RESEALABLE CLOSURE FOR BOTTLES AND OTHER CONTAINERS

Alrik Civer Lindstrom, Bjornlundavagen 12, Alvsjo, Sweden

Filed March 28, 1969, Ser. No. 811,417
Claims priority, application Sweden, April 10, 1968, 4908/68; Oct. 31, 1968, 14790/68
Int. Cl. B65d *41/16*
U.S. Cl. 222—546 3 Claims



The invention concerns a resealable closure for bottles and other containers, the closure including a cap engaging around the mouth portion of the container, and an external safety or reinforcing element engaging around the cap and provided with an inner locking means engaging about the outside of the cap, the locking means preventing withdrawal of the outer element from the cap by pulling but permitting said element to be

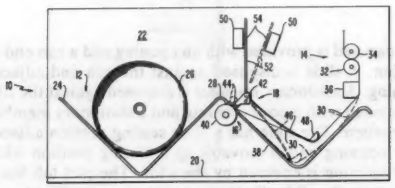
pushed onto the cap. According to the invention the outer element consists of a capsule provided with an inner thread or helically shaped outwardly projecting edge of asymmetric profile, said thread or edge forming said locking means. The cap may present one or more break pins adapted to pass into a corresponding groove in the opening edge of the capsule.

3,704,820

WEB TENSION CONTROL DEVICE

Harold M. Frederick, Birmingham, and Dewey M. Sims, Jr., Westland, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 3, 1971, Ser. No. 139,602
Int. Cl. B65h *25/04*
U.S. Cl. 226—34 **9 Claims**



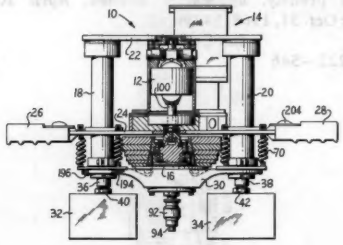
A web feeding device is provided having a receptacle for peripherally supporting a web supply roll, a web feeder for moving a web past a print station or the like upon demand and a web tension control device mounted therebetween for supplying web from the former to the latter. The web tension control device has a pressure roller pivotable to press a passing web effectively against a continuously rotatable friction roller in response to an increase in web tension as detected by a lever contacting the web and operatively coupled to the pressure roller.

3,704,821

PORTABLE FRICTION WELDING MACHINE

Calvin D. Loyd, Peoria; Theodore L. Oberle, Washington, and Ronald L. Satzler, Metamora, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 28, 1970, Ser. No. 84,746
Int. Cl. B23k *27/00*
U.S. Cl. 228—2 **11 Claims**



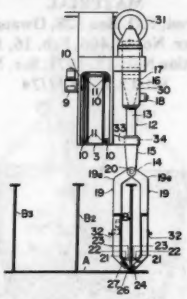
A portable friction welding machine is provided with a pair of ram mechanisms which provide the necessary axial pressure during a welding operation and also operate to move a spindle of the welding machine to a position where the spindle may be pivoted outside the main machine body so that flywheels may be easily attached or removed from the spindle. The machine is also provided with an automatic disconnect mechanism between the drive motor and the spindle which disconnects the motor from the spindle upon the application of welding pressure through the rams.

3,704,822

APPARATUS FOR FORMING T-WELDS BETWEEN MUTUALLY PERPENDICULAR PLATES

Hirokazu Nomura, Yokohama, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed March 20, 1970, Ser. No. 21,392
Int. Cl. B23k *1/00, 5/00*
U.S. Cl. 228—25 **6 Claims**



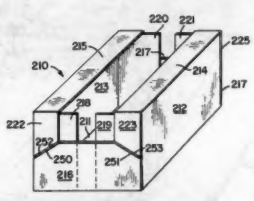
A welding apparatus for forming T-welds between a base plate and a plurality of reinforcing plates perpendicular thereto. Each of the latter reinforcing plates has an edge engaging a surface of the base plate to form a pair of corners therewith extending longitudinally of this edge, and a pair of fillet welds are simultaneously deposited in the pair of corners of each reinforcing plate so that in a single pass each reinforcing plate is T-welded to the base plate. For this purpose a pair of welding means are provided at each of the corners and a carriage means carries a pair of welding means for simultaneously transporting them longitudinally along the pair of corners to simultaneously deposit fillet welds in the latter, respectively.

3,704,823

OPEN-TOP STACKING CARTON AND BLANK THEREFOR

William J. Howe, Los Altos, Calif., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed Dec. 8, 1969, Ser. No. 883,216
Int. Cl. B65d *5/18*
U.S. Cl. 229—32 **3 Claims**



A package of containerized goods, a packaging method, and a crate-like carton. The carton has a mostly-open top wall and partly-open front and rear walls, with closed bottom and side walls, all made from a single, continuous, generally rectangular blank of corrugated board. The vertical side walls are hinged to the bottom wall, and a top reinforcing horizontal wall portion is hinged to each of the side walls. Front and rear flaps are attached to each of the bottom, vertical and top walls. The flaps hinged to the bottom wall have a median height no more than half the height of the side walls and are secured to the flaps that are hinged to the side walls, which are substantially less than half as wide as the bottom wall. Also secured to these flaps are the flaps from the top wall, which

are narrower than the flaps secured to the side walls. In one form of the invention, the top-wall flaps meet the bottom-wall flaps along a diagonal line. The containers, whether single-tiered or plural-tiered, substantially fill the carton, and individual containers can be taken out through the top of the carton without having to open it. During packaging, the carton is brought snugly around the containers, and this snugness strengthens the carton walls during subsequent stacking of cartons.

3,704,824

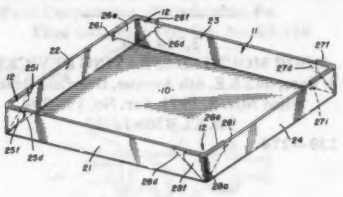
FIBERBOARD FLAT WITH JOINED STRENGTHENED CORNERS FOR SETTING UP INTO AN ANGULAR TRAY AND THE SET-UP TRAY

Thomas E. Croley, Worthington, Ohio, assignor to Corco, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 107,335, Jan. 18, 1971, abandoned. This application March 5, 1971, Ser. No. 121,279

Int. Cl. B65d *5/36*

U.S. Cl. 229—32 **7 Claims**



A flat of fiberboard or similar material which can be set-up to provide an angular tray with a main flat wall and a peripheral flange at a right angle to the plane thereof, the flange consisting of flaps hinged to the main wall and joined together at the angles of the tray. Each angular joint of the set-up tray is of such a structure that it has increased strength. The flat is manufactured in collapsed or flat condition with all corners joined ready to be expanded into set-up condition to provide the final tray. It is provided with improved corner-connecting joints which will ensure that in setting it up, bending will occur only at certain scored fold lines.

3,704,825

THEFT-PREVENTION STRUCTURE FOR DEPOSITORIES

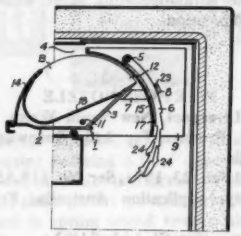
Kango Hinohara; Tadashi Nishino, both of Hiroshima, and Hiroshi Harada, Gion-machi, all of Japan, assignors to Kabushiki Kaisha Kumahira Seisakusho, Hiroshima-shi, Japan

Filed Nov. 20, 1970, Ser. No. 91,498

Claims priority, application Japan, Feb. 6, 1970, 45/9987

Int. Cl. E05g *1/00*

U.S. Cl. 232—44 **10 Claims**



A depository having a structure which prevents unauthorized removal of items from the depository. The depository includes an enclosure having a hollow interior to which access may be had through a lower door which can only be opened in an authorized manner. The enclosure has an upper drop-in opening and an upper door movable between a closed position closing the drop-in opening and an open position also closing the drop-in opening. However the upper door has a receiving portion accessible when the upper door is in its open position for receiving an item to be placed in the enclosure, and the upper door drops the item into the hollow interior of the enclosure when the upper door is returned to its closed position. A blocking structure is provided at the rear of the upper door for blocking removal of items in the enclosure out through the upper drop-in opening thereof, and this blocking structure is mounted for movement away from a blocking position when engaged by an item falling from the receiving portion of the upper door down into the hollow interior of the enclosure. the upper door has a locking structure which coacts with the blocking structure to lock the latter against movement away from the blocking position whenever the upper door is displaced even through a small part of the way from its closed toward its open position. Also, the blocking structure coacts with the lock structure to prevent movement of the upper door toward its open position in the event that the blocking structure has been displaced in some way away from the blocking position.

3,704,826

REAL TIME FAST FOURIER TRANSFORM PROCESSOR WITH SEQUENTIAL ACCESS MEMORY

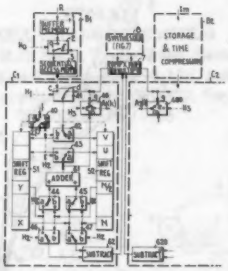
Jean-Claude Constantin, Cagnes sur Mer, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 24, 1970, Ser. No. 101,281

Claims priority, application France, Dec. 31, 1969, 6945634

Int. Cl. G06f *7/38, 15/34*

U.S. Cl. 235—156 **11 Claims**



N complex samples of an input signal are stored in a sequential access circulating memory, and then transmitted to a calculator which has a pair of shift registers, each of N words capacity; the shift registers have terminals spaces by a single bit position from a final terminal, and an intermediate terminal, and are, alternatingly, stepped at shift rates of f and $2f$ respectively. An iterative method of fast Fourier transformation calculation is carried out by sequential access to the shift registers, alternatingly, and calculation of inputs (or outputs from) selected terminals of the shift registers, by means of selected interconnection from the specific shift registers to an adder, a subtraction circuit, and a multiplier which multiplies selected signals with a synthesized binary reference signal. The apparatus is useful for electrical signal spectral analysis.

3,704,827

SELF PROPELLED IRRIGATION SYSTEM

Thomas S. Moulton, Somerset, Wis., assignor to Moulton Irrigation Company, Somerset, Wis.

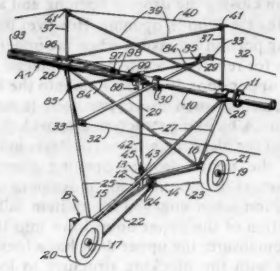
Filed Sept. 8, 1971, Ser. No. 178,633

Int. Cl. B05b *3/00*

U.S. Cl. 239—177 **11 Claims**

An irrigation system includes an elongated water distribution pipe supported by wheeled supports and rotatable about a water supply source. The wheeled supports are driven by

power derived from the rotation of the sprinkler heads. Means is provided for increasing or decreasing the speed of each



sprinkler head to keep the pipe straight. Means is also provided for instantly disconnecting each carriage from the sprinkler head when desired.

3,704,828

AIRCRAFT FAN WITH OUTFLOW DEFLECTORS

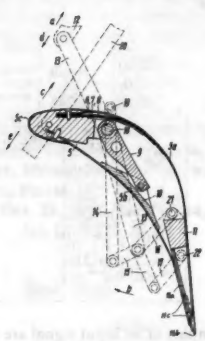
Hans-Luzius Studer; Eckart Petri; Karl Wurmstedt, and Jan Tomas Haas, all of Hamburg, Germany, assignors to Hamburger Flugzeubau GmbH, Hamburg, Germany

Filed Dec. 2, 1970, Ser. No. 94,296

Claims priority, application Germany, Dec. 16, 1969, P 19 62 956.2

Int. Cl. B64c *15/06*

U.S. Cl. 239—265.19 **10 Claims**



The cruise and lift fans of an aircraft are provided with an array of deflectors of the jalousie type forming a directed outflow path. The deflectors are generally of airfoil or aerodynamic profile and have flexible skins with an internal mechanism enabling the curvature to be altered to adjust the outflow direction through at least 105°.

3,704,829

JET NOZZLE

John Matthew Hall, Bristol, England, assignor to Sectretary of State for Defense in Her Britainnic Majesty's Government of the United Kingdom of Great Britain & North Ireland, Whitehall, London, England

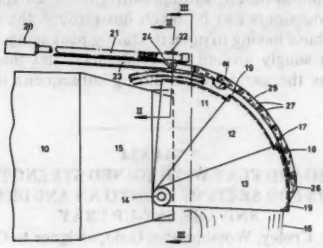
Filed July 21, 1971, Ser. No. 164,794

Claims priority, application Great Britain, July 31, 1970, 37,062/70

Int. Cl. B64c *15/04*

U.S. Cl. 239—265.35 **1 Claim**

A jet nozzle for thrust vectoring has a jet pipe, at the downstream end of which are a plurality of part spherical segments which are movable from a nested position around the jet pipe into a position in which they deflect the stream of exhaust gases from the jet pipe. The movement is effected by a



chain which is pushed and pulled by a linear actuator, the chain links having abutments thereon which limit the amount of flexing of the chain to a radius determined by movement of the outermost segment.

3,704,830

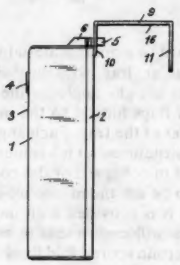
DOOR MOUNTED SPRAYING DEVICES

William J. Faso, 602 S.E. 6th Avenue, Deerfield Beach, Fla.

Filed Nov. 3, 1971, Ser. No. 195,294

Int. Cl. B30b *15/30*

U.S. Cl. 239—274 **8 Claims**



A spraying device comprising a housing carried by the movable door of a room and containing a pressurized spray container for a deodorant or other liquid, the housing carrying a movable projecting part in a position to be contacted by a part of the door frame each time that the door is closed to thereby depress the plunger of the spray container and spray the contents of the same. The invention contemplates the provision of an improved mounting means for the housing and by which the housing is assured of being in the required position on the door relatively to the door frame for the effective depression of the spray-operating lever when the door is moved to a closed position.

3,704,831

FIRE HOSE NOZZLE

William Clark, Liverpool, New South Wales, Australia, assignor to B. F. Products Pty. Ltd., Burnwood, New South Wales, Australia

Filed Feb. 23, 1971, Ser. No. 118,130

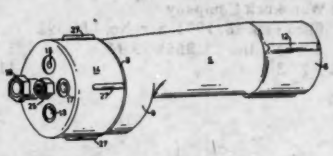
Claims priority, application Australia, Feb. 29, 1970, PA0428/70

Int. Cl. A62c *31/02*

U.S. Cl. 239—394 **5 Claims**

A fire hose nozzle composed of a hollow handgrip portion and a rotatable nose section providing for the choice of any of a plurality of different sized jet. The handgrip portion has an

offset enlarged end with a flat transverse face mounting a threaded stud and having an offset supply port connected with the interior of the handgrip portion. The nose section is



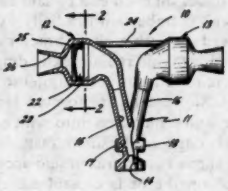
mounted upon the stud and selectively tightened down by a nut onto the transverse face through a flat sealing washer of synthetic polymeric material to ensure a liquid-tight seal while permitting rotation of the casing.

3,704,832

FLUID FLOW CONTROL APPARATUS

John W. Fix, Laguna Niguel; Charles E. Hallum, Irvine, and Warren F. Kaufman, Santa Ana, all of Calif., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed Oct. 30, 1970, Ser. No. 85,510
Int. Cl. B05b *1/26*
U.S. Cl. 239—461 6 Claims



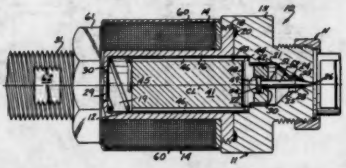
A fluidic thruster valve capable of operating in space, or other low pressure environments. The two passages of a supersonic bistable fluid amplifier lead, respectively, to a pair of reaction thrust nozzles, each in series flow connection with a vortex fluid amplifier. The tangential control nozzles of the vortex fluid amplifier are interconnected through a cross bleed duct, so as to limit leakage from the non-energized thrust nozzle.

3,704,833

SOLENOID VALVE ASSEMBLY

Fred O. Wheat, P.O. Box 308, Lilburn, Ga.

Filed Feb. 17, 1971, Ser. No. 116,161
Int. Cl. B05b *1/30*
U.S. Cl. 239—585 6 Claims



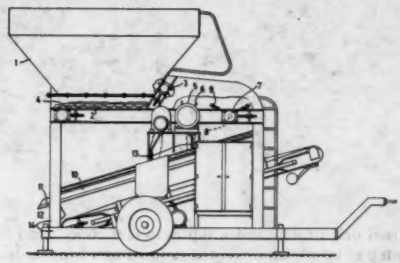
A high pressure solenoid valve and spraying head unit including a housing defining a fluid chamber therein with an inlet thereto and an outlet therefrom. An armature is slidably received in the chamber for movement toward and away from the outlet and is spring urged toward the outlet. A pilot adapted to close the outlet is carried by the armature but is freely movable with respect thereto for a prescribed distance. A magnetic coil is provided about the housing to selectively urge the armature and pilot away from the outlet to allow fluid to pass from the chamber.

3,704,834

APPARATUS FOR DISINTEGRATION AND SEPARATION OF SOIL AND SIMILAR MATERIALS

Harry Nilsson, Stjarnvagen 10, 172 46 Sundybert, and Gunnar Larsson, Pinnmovagen 6, 803 50 Gavle, both of Sweden

Filed Feb. 16, 1971, Ser. No. 115,379
Claims priority, application Sweden, Feb. 20, 1970, 2168/70
Int. Cl. B02c *13/02, 13/20*
U.S. Cl. 241—79.2 5 Claims



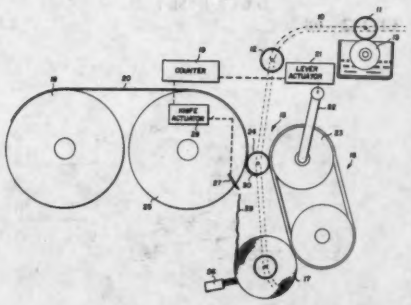
An apparatus for disintegration and separation of soil material, comprising a hopper to which the soil to be treated is supplied, and a conveyor disposed at the outlet of the hopper for forwarding of soil for further treatment. The improvement comprises a grate rotor at the discharge and of the conveyor for disintegrating the soil material and throwing the same into the working area of a whipping rotor having whipping chains for further disintegration of the soil and a sieve adapted to receive the treated material and separate waste material from usable soil.

3,704,835

ROLL CHANGING SYSTEM

Arthur E. Harley, R.D. No. 2, Taylor Road, Savannah, N.Y.

Continuation-in-part of Ser. No. 837,174, June 27, 1969, abandoned. This application July 13, 1971, Ser. No. 162,192
Int. Cl. B65h *19/26*
U.S. Cl. 242—56 A 10 Claims



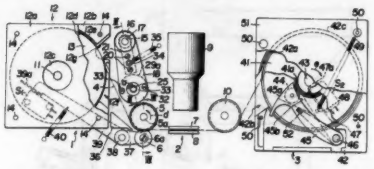
A roll changing system is intended for a web winder for paper towels or tissues in which a sequence of rotatable cores are coated with bands of glue and advanced through a winding station where a belt drive assembly rotates the cores to wind the web. The web is severed between a fully wound roll and a successive empty core in such a way as to leave a glued trailing end and a glue leading end so that the trailer is adhered to the empty core for winding a new roll. To accomplish this, a counter signal that a roll is fully wound causes the belt drive assembly to press the successive empty core against the web on a back-up roll containing retractable knife which extends rotationally past the line of tangency with the successive core and behind the leading edge of the glue deposited on the web by the core to sever the web intermediate the glue line to leave a glued trailing end a glued leading end.

3,704,836

AUTOMATIC CARTRIDGE TAPE THREADING DEVICE

Hiroshi Yamada, Chiba-ken, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed March 29, 1971, Ser. No. 128,881
Claims priority, application Japan, April 8, 1970, 45/29870
Int. Cl. G03b *1/58*; G11b *15/32*; B65h *17/08*
U.S. Cl. 242—192 10 Claims



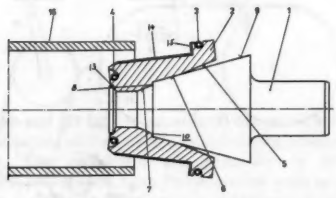
A reel drive roller and a tap draw-out roller are rotatably mounted coaxially on a pivoted support arm and are driven by belt means. When the arm is swung toward the opening in a cartridge, the reel drive roller engages a flange of the tape reel to rotate the tape reel to expand the outer convulsions of the wound tape radially outwardly and the tape draw-out roller engages the outer convulsions under some pressure to feed the leading end of the tape to a capstan roller associated with a pinch roller. The capstan roller and the pinch roller feed the draw-out tape to a take-up reel having a hub provided with a friction surface.

3,704,837

CHUCKING ARRANGEMENT FOR HOLLOW CORES, PARTICULARLY FOR NEWSPRINT ROLLS AND THE LIKE

Hubert Heinz, Lauben, and Gunter Honsberg, Dietmannsried, both of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg AG, Augsburg, Germany

Filed July 19, 1971, Ser. No. 163,580
Claims priority, application Germany, July 30, 1970, G 70 28 636.1
Int. Cl. B65h *17/12*
U.S. Cl. 242—68.2 6 Claims



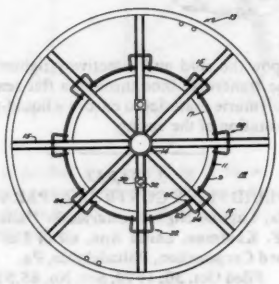
A mandrel has a conical chucking head on which chucking jaws are located, the conical head having a predetermined angle of inclination; the interior surfaces of the chucking jaws have three internally inclined, successive surfaces of inclination, the third and the first matching the angle of inclination of the chucking head whereas the middle one has a lesser inclination; the inner and the middle angles are joined by an offset, the chucking head having a matching shoulder. The outer surfaces of the jaws are cylindrical. Upon introduction of the arrangement into a hollow core, the inner surfaces of the core will tip the chucking jaws above the edge formed by the two dissimilar surfaces of inclination, releasing the inter-engagement shoulder and offset to permit centered location of the jaws while enabling tight fitting.

3,704,838

METAL REEL

Robert N. Bernier, Woonsocket; Dwight W. Blackmer, Cumberland, and Paul L. Paulsen, East Providence, all of R.I., assignors to Wanskuck Company

Filed Feb. 18, 1971, Ser. No. 116,392
Int. Cl. B65h *75/18*
U.S. Cl. 242—77.3 11 Claims



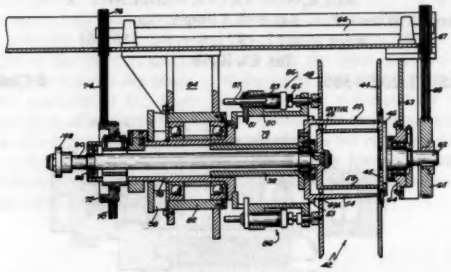
A collapsible metal reel having a cylindrical barrel with a plurality of peripherally spaced tabs extending from each of its ends and having heads on each end of said barrel. Each head has an annular wall member with radially extending ribs attached to its outer face with arcuate brace members secured at their opposite ends to said radially extending ribs. The arcuate brace members have a surface parallel to the tabs of said cylindrical barrel. Slot means are formed radially outwardly from the arcuate brace members into which the tabs of the barrel are matingly engaged. Resilient fastening means are inserted in radially aligned apertures in said arcuate brace members and the tabs on the ends of said barrel to detachably secure said head to the barrel to provide a quickly assembled and disassembled reel structure.

3,704,839

DUAL BOXING COILER

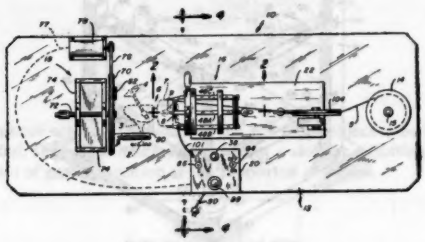
Dickran Manoogian, Cranston, R.I., assignor to The Entwistle Company

Filed Dec. 30, 1970, Ser. No. 102,843
Int. Cl. B21c *47/00*; B21f *3/04*
U.S. Cl. 242—80 4 Claims



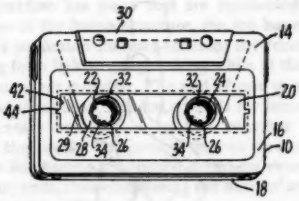
A dual boxing coiler that directs alternately predetermined lengths of wire first down one path and then down a second path, each of these paths leading to a separate wire coiling reel having a barrel. At the coiling reel the wire automatically threads itself into an opening in the barrel which is formed by fork-like fingers extending from a disc-like end plate. Drive means are connected to the barrel for imparting thereto rotation that coils the wire on the barrel. Means are attached to the barrel to shift it laterally out of the space separating the heads of the wire coiling reel, thus allowing a completed coil of wire to drop into an awaiting package.

3,704,840
BULK FISHING LINE APPLICATOR
John S. Haddock, 2646 East 34th, Tulsa, Okla.
Filed June 4, 1971, Ser. No. 149,929
Int. Cl. A01k *89/00*
U.S. Cl. 242—84.2 R 5 Claims



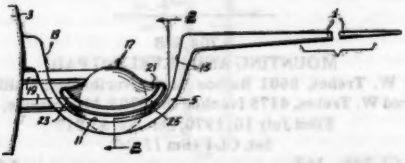
In a bulk spool fishing line applicator for transferring monofilament fishing line from a bulk spool onto the spool of a spinning reel, the fishing reel line spool is rotated relative to the pickup cylinder thereof by electrical means. An automatic stop mechanism de-energizes the rotating means when a predetermined amount of line has been received on the fishing spool.

3,704,841
MAGNETIC TAPE CARTRIDGE
Keith S. Brown, Cupertino, Calif., assignor to Memorex Corporation, Santa Clara, Calif.
Filed Jan. 28, 1971, Ser. No. 110,403
Int. Cl. G03b *1/04*; G11b *15/32, 23/04*
U.S. Cl. 242—199 4 Claims



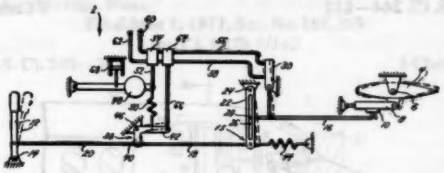
An improved tape cartridge of moulded plastic having opposing tape reel viewing windows with internally projecting annular ridges fabricated around the periphery of spindle holes in the windows, the annular ridges being fabricated with relief slots for eliminating cracking of the windows during use.

3,704,842
CONTOURED STACK OF JET ENGINE WITH CHANNEL WING AIRCRAFT
Willard R. Custer, 1905 W. Washington Street, Hagerstown, Md.
Filed Oct. 16, 1970, Ser. No. 81,266
Int. Cl. B64c *15/04*
U.S. Cl. 244—12 CW 1 Claim



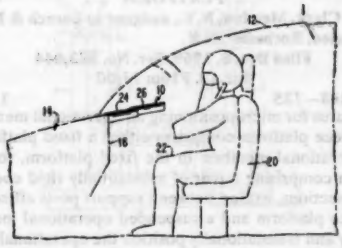
The discharge end of the exhaust stack of the jet engine is flattened and contoured to provide an elongated, curved, channel-shaped discharge opening, and the jet engine is mounted so that the discharge end of the exhaust stack is disposed adjacent to and a short distance above the leading edge of the open channel for discharging all of the exhaust gases in a flat stream parallel with the channel surface to provide a lift effect.

3,704,843
AIRCRAFT CONTROL SYSTEM
Robert B. Jenny, Kirkwood, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.
Filed June 11, 1970, Ser. No. 45,428
Int. Cl. B64c *13/04*
U.S. Cl. 244—85 12 Claims



A control system for operating the longitudinal control surface of an aircraft in response to movement of the control stick in the cockpit. The control system includes a variable ratio linkage arrangement connected between the stick and the power actuator which moves the control surface. The ratio of the linkage arrangement is varied by a fluid operated motor, and when that ratio is varied in the presence of a load factor on the aircraft the control surface also moves. An accelerometer and regulator spring are mounted in opposition to one another and are connected to a control valve which directs fluid to the motor for changing the linkage ratio. The regulator spring is also connected with the linkage arrangement so that the force exerted by it on the accelerometer varies with the stick position. When the spring and accelerometer are balanced the control valve remains closed. However, when one overcomes the other the valve opens and changes the linkage ratio along with the control surface position such that the resulting change in the normal acceleration of the aircraft tends to restore the accelerometer and regulator spring to a balanced condition. Accordingly a prescribed load factor is associated with every position of the stick, and the stick need not be adjusted when the speed and location of the center of gravity of the aircraft change. The control system also renders the control surface less sensitive to stick movement at higher speeds.

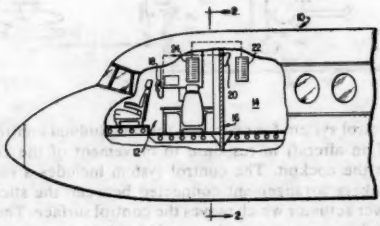
3,704,844
GLARE SHIELD ASSEMBLY
Walter C. Wolf, Los Angeles, Calif., assignor to Thermodyne International, Ltd.
Filed Dec. 14, 1970, Ser. No. 98,000
Int. Cl. B60j *3/02*
U.S. Cl. 244—121 10 Claims



A glare shield assembly for an aircraft instrument panel includes a base panel mounted to shield the instrument panel

and a number of extension panels which can be slidably moved to extend the area of the glare shield. The extension panels desirably are made of a high heat-resistant, flexible thermoplastic material and are mounted on a telescoping sliding guide channel which, in turn, is hinged such that in the event of an ejection of the pilot from the aircraft, the extension panels rotate about the hinged portion to a cleared position upon impact thereto by, for example, the knees of the pilot.

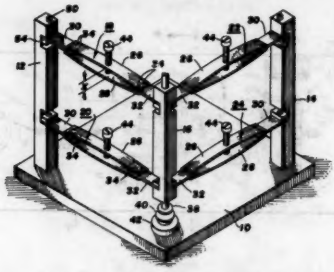
3,704,845
AIRPLANE HIJACKING PREVENTION SYSTEM
Michael Ord, 5267 Wilkins Avenue, Pittsburgh, Pa.
Filed Jan. 14, 1971, Ser. No. 106,337
Int. Cl. B64c *1/10*
U.S. Cl. 244—121 **8 Claims**



A method and system for preventing airplane hijacking provides for isolating the pilot and the cockpit from the passenger cabin of the airplane while nevertheless maintaining the necessary communication therebetween for assuring safety of the passengers and the airplane. Physical access between the cabin and the passenger compartment is restricted by a door which can be opened only from the cockpit, both the door and the associated bulkhead being of fire resistant, bulletproof material. An audio system provides verbal communication only from the cockpit to the cabin, and not in the reverse direction. Communication from the cabin to the cockpit is afforded exclusively by an electrical signalling system affording communication only of predetermined messages, specifically excluding any indication of hijacking attempts. The pilot's primary response to any emergency signalling indication is to land at the nearest airport. By assuring that all passengers are warned in advance of the installation in a plane of the system of the invention, potential hijackers are discouraged from even attempting to hijack a plane, since any effort to that end would be totally fruitless.

3,704,846
APPARATUS FOR MICROPOSITIONING AN OPERATIONAL MEMBER AND A WORKPIECE PLATFORM
James A. Clark, Mendon, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Dec. 8, 1969, Ser. No. 883,044
Int. Cl. F16m *13/00*
U.S. Cl. 248—125 **11 Claims**

Apparatus for micropositioning an operational member and a workpiece platform comprises either a fixed platform or a fixed operational member. In the fixed platform, four arms, each arm comprising a pair of substantially rigid coextensive resilient sections, extend between support posts affixed to the workpiece platform and a suspended operational member to angularly and translationally position the operational member relative to the workpiece platform by varying the extending length of each arm from the support posts by varying the spacing between each pair of resilient sections proximate their midpoints. In the apparatus for aligning the workpiece platform relative to the operational member, the platform has adjustable legs for angularly positioning the platform relative to the operational member and substantially rigid resilient trans-



lating legs fixed relative to the operational member, engaging the workpiece platform for translating the platform relative to the operational member by varying the length of each leg extending between its fixed point and the platform.

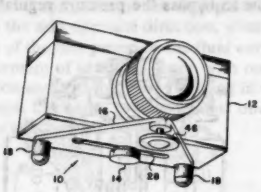
3,704,847
SUPPORT
Fred A. Schmitt, Nutley, N.J., assignor to Litton Business Systems, Inc., New York, N.Y.
Filed Sept. 2, 1970, Ser. No. 68,962
Int. Cl. F16m *11/00*
U.S. Cl. 248—127 **4 Claims**

A device including a first surface adapted to receive the haunches or posterior extremety of a person and a second surface adapted to receive either both or one of the persons feet, to support the person in a leaning type position with his weight distributed so that a sufficient amount thereof is transmitted through said second surface to the surface upon which the support is disposed to minimize relative movement therebetween and thus obviate the need for securing the support in place.

3,704,848
MOUNTING AND LEVELING PAD
Eric W. Trebes, 8601 Balboa Blvd., Northridge, Calif., and Fred W. Trebes, 4175 Ivanhoe Dr. 0703, Monroeville, Pa.
Filed July 10, 1970, Ser. No. 53,917
Int. Cl. F16m *11/04*
U.S. Cl. 248—163 **5 Claims**

A leveling pad for cameras and the like, usually triangular in shape. The pad, per se, includes a downwardly extending foot

on each of its corners, at least one foot being vertically adjustable for leveling purposes. The pad is provided with an at-



tachment screw for connecting the pad to an object to be supported, the screw being positioned in a slot for adjusting the center of gravity position of the supported structure.

3,704,849

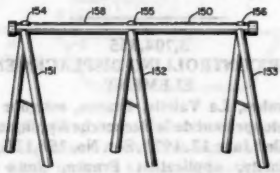
BOLTLESS GYM SET

Martin Green, 243 Franklin Turnpike, Mahwah, N.J.

Filed Sept. 23, 1969, Ser. No. 860,250

Int. Cl. F16m *11/32*

U.S. Cl. 248—165 **6 Claims**



A gym set having boltless joining members wherein one member interlocks into the other through gravity friction. This frame construction has plays that are connected to the top horizontal bar of the frame structure, the top bar of the structure having a minimum number of holes for receiving plays, thus allowing for a lighter gauge tubing while at the same time providing a stronger member. The end of one member of the structure having tapered, reinforced ends for insertion within a complementary opening in another member to provide tightening at the interlocked joint of the two members while in use. The top bar having reinforced members extending from its center to its ends, thus eliminating the need of an additional two legs for center support.

3,704,850

TELESCOPICALLY COLLAPSIBLE TABLE LEG

Philip J. Hendrickson, and Richard J. Resch, both of Green Bay, Wis., assignors to Krueger Metal Products, Inc., Green Bay, Wis.

Filed Jan. 4, 1971, Ser. No. 103,590

Int. Cl. F16m *11/24*

U.S. Cl. 248—188.5 **3 Claims**

An adjustable table leg structure includes an upper leg connected to the table top and a leg extension or lower leg portion which is telescopically reciprocable within the upper leg to afford height adjustment. The extension leg is held in the adjusted position by a spring biased pawl which is pivoted on the exterior of the upper leg and has a terminal tooth which projects through a slot in the upper leg for engagement with any one of a plurality of vertically spaced locking apertures in the leg extension. The tooth is released from engagement by manual pressure on an arm pivoted to the pawl. The tooth is locked in engagement by pivoting the arm to locate a blocking tab on the arm between the pawl and the upper leg to prevent movement of the pawl and thus provide secure support.

3,704,851

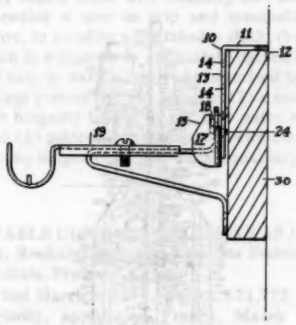
CURTAIN ROD SUPPORT

Louis A. Cormier, c/o Cormier Jewelers, 42 Central Street, Southbridge, Mass.

Filed June 7, 1971, Ser. No. 150,269

Int. Cl. A47h *1/142*

U.S. Cl. 248—265 **5 Claims**



A device for use in adjustably mounting an accessory element such as a curtain rod support on a window frame, casement or the like. The device is so constructed as to permit horizontal and vertical adjustment of the supported element. The device is readily assembled without the necessity for bolts, screws, clamps and the like. It can be used with conventional accessory elements without the necessity of modification thereto.

3,704,852

CONCRETE ELEMENT CASTING APPARATUS

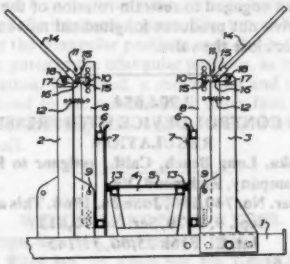
Sven Arvid Emanuel Wellander, Malmo, Sweden, assignor to Ystads AB Smide & Svets, Ystad, Sweden

Filed June 7, 1971, Ser. No. 150,651

Claims priority, application Sweden, June 8, 1970, 7880/70

Int. Cl. B28b *7/22*

U.S. Cl. 249—50 **5 Claims**



An apparatus for casting concrete pillars, columns and beams comprises several units following upon each other and

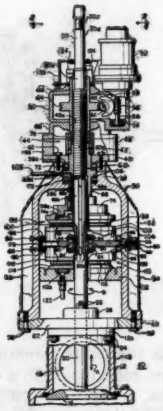
serving to support a pair of mold side walls and a bottom plate of a concrete mold, the mold side walls and the bottom plate being exchangeable for permitting casting concrete elements of varying lengths, the distance between the mold side walls being adjustable and the height position of the mold side walls being variable to permit casting concrete elements of varying sizes, and the mold side walls being so arranged as to allow being moved apart for "opening" of the mold so that the concrete element cast can be removed.

3,704,853

VALVE WITH DIFFERENTIAL CLUTCHING VALVE ACTUATOR

Henry A. Waller, Los Angeles, Calif., assignor to Consolidated Controls Corporation, Bethel, Conn.

Filed March 26, 1971, Ser. No. 128,466
Int. Cl. F16d *13/42, 67/04*; F16k *31/00*
U.S. Cl. 251—59 **10 Claims**



A valve including a body having a seat cooperating with a valve closure member and an actuator mechanism comprising an elongated valve stem connected to the closure member and having a threaded portion intermediate its ends. Differential clutch means is associated with the valve stem for rotation therewith and/or relative slidable displacement along the length of the stem. A drive nut is rotatably driven and mounted on the valve body for engagement with the threaded portion of the stem and means is provided for rotating the drive nut. A clutch mechanism selectively interconnects the nut and the differential clutch member whereby engagement of the clutch causes rotation of the stem in response to rotation of the drive nut. A brake mechanism selectively interconnects the valve body and the differential clutch member and is operative when engaged to restrain rotation of the valve stem so that the drive nut produces longitudinal movement of the stem to open or close the valve.

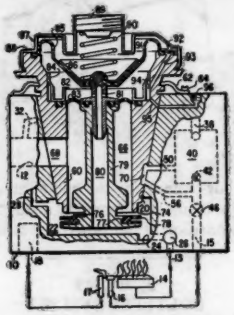
3,704,854

FLOW CONTROL DEVICE WITH PRESSURE REGULATION

Jay R. Katchka, Long Beach, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 740,150, June 26, 1968. This application Sept. 9, 1970, Ser. No. 70,812
Int. Cl. F16k *25/00, 31/145*
U.S. Cl. 251—61.2 **2 Claims**

A flow control device having a manually operable valve movable between a plurality of controlling positions for delivering fluid flows to main and pilot outlets; a pressure regulator assembly downstream of the manually operable valve regulates the pressure of the pilot flow as well as the main flow and the manually operable valve selectively permits the pilot flow to bypass the pressure regulator. Upstream of



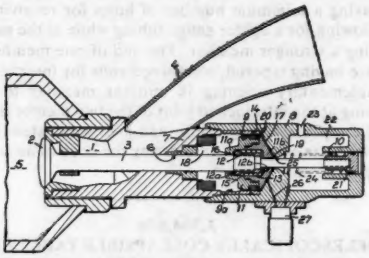
the pilot flow outlet the pilot flow line is provided with restricting orifices to prevent an excess of a non-regulated pilot flow and to dampen a regulated pilot flow as is necessary during initial compensation of the regulator.

3,704,855

DEVICE FOR CONTROLLING DISPLACEMENT OF AN ELEMENT

Robert P. Combes, La Valette, France, assignor to Societe pour le Developpement de la Recherche Appliquee

Filed June 17, 1971, Ser. No. 154,135
Claims priority, application France, June 18, 1970, 7022521
Int. Cl. F16k *31/143*; F15b *15/22*
U.S. Cl. 251—63.4 **10 Claims**



A device for controlling the displacement of an element, the said device comprising a rod by means of which the element may be displaced, a first piston having a portion mounted for sliding movement on and sealed to the rod, a first cylinder within which the first piston is slidably mounted and which defines therewith an admission chamber whose volume changes on movement of the first piston, the admission chamber being adapted to be selectively brought into and out of communication with a source of fluid under pressure, the fluid in the admission chamber acting on a pressure surface of the first piston so as to urge the latter in a predetermined direction, means for urging the first piston in the opposite direction, an expansion chamber for the fluid under pressure, means establishing communication between the expansion chamber and the admission chamber when the volume of the latter exceeds a predetermined volume which is substantially less than its maximum volume, the minimum volume of the admission chamber being less than that of the said predetermined volume, stop means mounted on and secured to the rod, opposite faces of the stop means being respectively engageable by corresponding faces of the first piston to limit

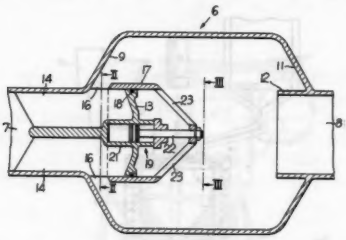
relative movement therebetween in the said predetermined and opposite directions, and resilient means which are interposed between the stop means of the first piston and which urge the latter in the said opposite direction, whereby the initial displacement of the first piston by the fluid corresponds to a relative displacement of said first piston with respect to the rod, the first piston and rod thereafter moving in unison only after the first piston has come to bear against one of the opposite faces of the stop means.

3,704,856

VALVE WITH ENERGY DISSIPATION CHAMBER

Tgnacy Swiecicki, York, Pa., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Nov. 5, 1970, Ser. No. 87,245
Int. Cl. F16k 47/00
U.S. Cl. 251—118 1 Claim



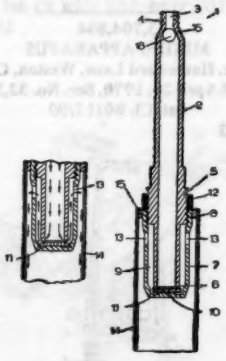
A valve for handling large volumes of water including an energy dissipating chamber. A valve is provided at the inlet to the chamber which includes a water deflecting surface causing the onrushing water to be deflected against the side walls of the energy dissipating chamber when the valve is open. A sleeve slidably contained on the deflecting member engages the end wall of the dissipating chamber when it is desired to block the flow of water. To open the valve the sleeve is moved downstream from the end wall presenting an unobstructed circular orifice forcing the water into a fan shape as it enters the energy dissipating chamber.

3,704,857

WATER FLOW SILENCING MEANS

George Henry Claridge, 91 Easther Crescent, Kew, Dunedin, New Zealand

Filed Sept. 22, 1970, Ser. No. 74,455
Int. Cl. F16k 47/10
U.S. Cl. 251—118 6 Claims



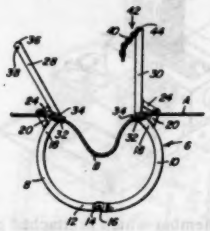
A water flow silencing means arranged to provide an adjustable back pressure to ensure water is delivered at an acceptable rate but without causing pipe noises normally associated with the use of valves or taps connected to high pressure water supply.

3,704,858

WIRE TIGHTENER

Duane A. Hutton, and Michael Hutton, both of Keating Stage, Baker, Oreg.

Filed Dec. 31, 1970, Ser. No. 103,140
Int. Cl. B25b 25/00
U.S. Cl. 254—81 6 Claims



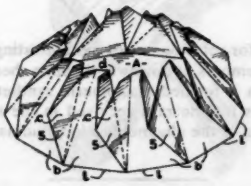
A manually usable fence wire handling tool designed and adapted to enable a user to grip and manipulate a post-suspended wire, to loop the wire, take up slack, then twist the looped portion in a manner to adequately tighten the wire. It comprises an easy-to-handle frame characterized by (1) a first pair of main legs pivotally joined together (2) a second pair of auxiliary legs hingedly linked to the free outer ends of the main legs and (3) paired and confronting wire clamping jaws fixed on coacting hinged ends of said main auxiliary legs.

3,704,859

INFLATABLE CUSHIONS OF UTILITY AS JACKS

Daniel Josien, Roubaix, France, assignor to Societe Anonyme Pronal, Roubaix, France

Filed March 8, 1971, Ser. No. 121,773
Claims priority, application France, March 19, 1970, 7009828
Int. Cl. B66f 3/24
U.S. Cl. 254—93 HP 8 Claims



A method for manufacturing an inflatable cushion of utility as a jack. The cushion is made from a piece of fabric coated with elastomer and comprising a polygonal bottom wall and a top wall which includes triangular portions between which are circumferentially interposed gores. The top wall is formed by folding over the triangular portions onto the bottom wall and securing the gores to the triangular portions, as by an adhesive or vulcanization. If desired, a reinforcing and retaining disc can be secured to the outer and/or inner face of the upper wall. A center inflating valve may be secured to the center of the upper wall.

3,704,860

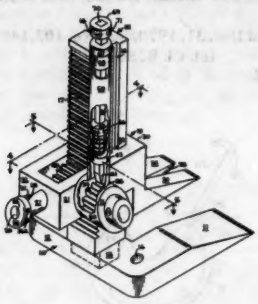
WEDGING AND PRYING TOOL

John M. Krupu, Box 564, La Moure, N. Dak.

Filed Jan. 25, 1968, Ser. No. 700,512
Int. Cl. B66f 3/02
U.S. Cl. 254—95 5 Claims

An apparatus for use a jack or pry tool with a U-shaped base member having a lifting bar or jaw disposed within the legs of

the base. The bar is attached to a carriage which is moved by a ratchet actuated rack and pinion. The rack teeth are formed



on a central post member which is attached perpendicular to the base and also serves as a guide means for the carriage.

3,704,861

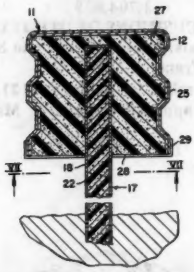
ROADWAY GUARD-RAIL ASSEMBLY

Ernest Glaesener, Dudelange, Luxembourg, assignor to ARBED, Acieries Reunies de Burbach-Eich-Dudelange SA, Luxembourg G.D. de, Luxembourg

Filed May 28, 1971, Ser. No. 147,817

Int. Cl. E01f *15/00*

U.S. Cl. 256—13.1 **7 Claims**



A guard rail for vehicular roadways consisting essentially of box-like rail members of downwardly open sheet-metal channels filled with a foamed elastomeric synthetic resin, with blade-like posts for the rails received in the synthetic resin mass. The walls of the channel are longitudinally corrugated or profiled.

3,704,862

VIBRATOR

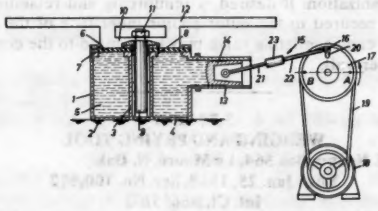
Virginio Sironi, Milan, Italy, assignor to Vibratechniques S.A., Paris, France

Filed Nov. 23, 1970, Ser. No. 92,121

Claims priority, application France, Nov. 21, 1969, 6940115

Int. Cl. B01f *9/00*

U.S. Cl. 259—1 R **10 Claims**



A vibrator, particularly for the manufacture of moulded concrete products, comprises a support for a mass to be vibrated and means for vibrating the support; said means including a reciprocable member having an elastic portion for increasing the acceleration of the support during vibration thereof when it is near its extreme positions of vibration.

3,704,863

APPARATUS FOR MIXING A PIGMENT DISPERSION INTO A POLYAMIDE MELT

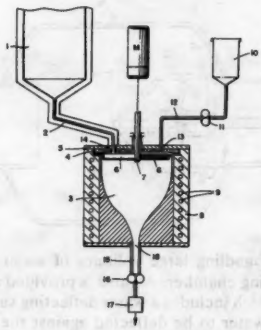
Ernst Meyer, Oberbruch/Rhineland; Wolfgang Grimm, Erlenbach; Klaus Gerlach, Obernau, and Helmut Linhart, Aschaffenburg, all of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 777,370, Nov. 20, 1968, Pat. No. 3,560,430. This application April 9, 1970, Ser. No. 31,443

Claims priority, application Germany, Nov. 21, 1967, P 16 94 348.9

Int. Cl. B01f *7/16*

U.S. Cl. 259—8 **7 Claims**



Process and apparatus for the uniform mixing of a polyamide melt with a pigment dispersed in a liquid medium soluble in the polyamide wherein the melt is divided, immediately after introduction of the liquid pigment dispersion as a thin liquid stream, into planar segments or displaced layers having a maximum thickness of about 1,500 microns, preferably 20 to 850 microns, using a paddle wheel stirring mechanism at the inlet end of an elongated mixing vessel tapering radially inwardly down to its outlet or discharge end.

This invention generally relates to a process for continuously mixing a pigment dispersion into a high molecular weight organic polymer which is in the molten state, for example nylon 6 (polycaprolactam), nylon 6,6 (polyhexamethylene adipamide) or other polyamides, particularly at the conclusion of a continuous polymerization or polycondensation process.

3,704,864

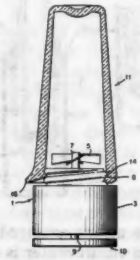
MIXING APPARATUS

Virginia Olga Lee, Homeward Lane, Weston, Conn.

Filed April 28, 1970, Ser. No. 32,598

Int. Cl. B01f *7/00*

U.S. Cl. 259—102 **2 Claims**



This invention relates to mixing devices, such as food mixers. One embodiment includes a mixer unit which may be

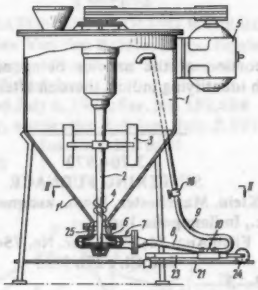
removably, sealingly affixed to the top of a receptacle containing the material to be mixed and the combination thereafter inverted during the mixing operation. Thereby a short-shafted universal mixer device may be used with a wide variety of receptacles.

3,704,865

PLANT FOR APPLYING SOLIDIFYING PLASTIC MASSES

Gennady Grigorievich Kharitonov, ulitsa Vagonoremontnaya, 9/25, kv.15; Anatoly Mitrofanovich Nebytov, Fortunatovskaya ulitsa, 18, kv. 42; Sergei Mikhailovich Doroshin, 3 Pryadilnaya, ulitsa, 7, kv. 26, and Mariana Sergeevna Alimova, Setunsky proezd, 19, kv. 23, all of Moscow, U.S.S.R.

Filed Jan. 5, 1970, Ser. No. 729
Int. Cl. B28c 5/10
U.S. Cl. 259—178 A 4 Claims



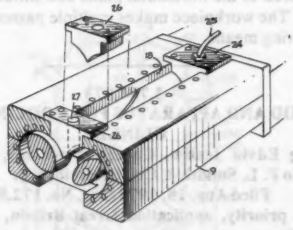
A plant for applying solidifying plastic masses, which is essentially a tank having a pipeline to connect the upper and lower portions of the tank with a view to providing a continuous circulation of the mass inside the tank.

3,704,866

CONTINUOUS MIXER

Douglas E. Mosher, Seymour; Carleton H. Treat, Oxford, and Edwin H. Drab, Shelton, all of Conn., assignors to USM Corporation, Boston, Mass.

Filed May 28, 1970, Ser. No. 41,322
Int. Cl. B29f 3/02; B01f 7/08
U.S. Cl. 259—192 11 Claims



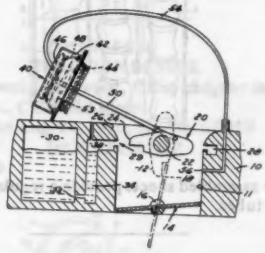
A continuous mixer has its barrel forming the rotor chambers upwardly open above these chambers and provided with removable closing sections.

3,704,867

LOW SILHOUETTE DUAL FLOW STAGE CARBURETOR

Roy E. Diehl, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed March 4, 1971, Ser. No. 120,954
Int. Cl. F02m 7/12
U.S. Cl. 261—62 10 Claims



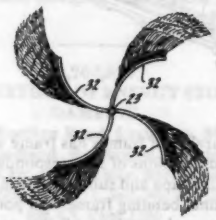
A downdraft type carburetor induction passage has essentially a constant cross-sectional area with a rounded edge air inlet, the rounded edge cooperating with a rotatable member having its peripheral surface in the form of an inverted semiventuri so as to form an inverted venturi whose area varies as a function of the rotation of the member to provide high fuel metering signals at low air flows and high air flow potential.

3,704,868

MECHANICAL AERATOR

Frank G. Weis, Kansas City, Mo., assignor to Ecodyne Corporation

Filed Sept. 25, 1970, Ser. No. 75,515
Int. Cl. B01f 3/04, 7/20
U.S. Cl. 261—91 8 Claims



A mechanical aerator for the aeration of a liquid, having an impeller positioned so as to contact the surface of the liquid, the impeller comprising: a shaft rotatable about a substantially vertical axis; and a plurality of backward curved vanes extending outwardly from the shaft, the vanes curved such that as the impeller rotates about a substantially vertical axis a series of thin film waves eminate spirally outward and upward from the vanes, such that each particle of liquid contained therein moves radially outward from the axis of rotation.

3,704,869

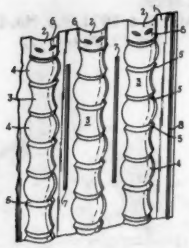
GAS/LIQUID FILM CONTACT APPARATUS

Ronald Priestley, 84 Chesterwood Road, Kings Heath, Birmingham 14, England

Filed Aug. 1, 1969, Ser. No. 846,751
Claims priority, application Great Britain, Aug. 6, 1968, 37,479/68
Int. Cl. B01f 3/04
U.S. Cl. 261—112 12 Claims

Packing sheets for gas/liquid contacting apparatus consist of a number of spaced parallel units, each of which is a sector of

a hollow corrugated tube, connected by planar portions of the



sheets. The assembled sheets provide a regular array of hollow corrugated tubes.

3,704,870

APPARATUS FOR SATURATING AND HARDENING THE STATOR WINDING RODS OF HIGH VOLTAGE ELECTRIC MACHINES

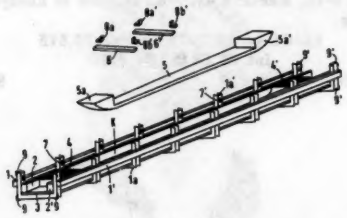
Gunter Kremser, Kassenberg 37, Mulheim-Ruhr, Germany

Filed May 12, 1970, Ser. No. 36,612

Claims priority, application Germany, May 23, 1969, P 19 26 356.0

Int. Cl. F27b 9/24; F27d 3/12

U.S. Cl. 263—2 R **9 Claims**



Each of a plurality of frames has frame wall portions defining the groove dimensions of a corresponding rigid rod wound with the insulating tape and substantially in its final configuration and additional bending frame wall portions for fixing the curved winding end portions of the rod in the junction between the straight groove portion and such end portions. A corresponding one of the rods is inserted into each of the frames thereby preparing the frames and the rods for a saturating operation. A carrier for a plurality of the rods and their frames are combined into a hardening unit. An additional frame is provided for all the rods in common at each surface at each end of the hardening unit for fixing the winding end portions and rod ends thereby preparing the frames and the rods for a hardening operation.

3,704,871

APPARATUS FOR HEAT TREATING METALLIC ARTICLES

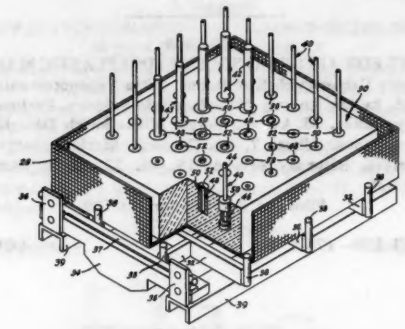
Carl G. Paulson, West Kingston, R.I., assignor to C. I. Hayes, Inc., Cranston, R.I.

Division of Ser. No. 675,437, Oct. 16, 1967, Pat. No. 3,615,927. This application July 13, 1970, Ser. No. 61,031

Int. Cl. F27b 3/02

U.S. Cl. 263—2 R **1 Claim**

The method and apparatus for heat treating metallic articles, wherein the articles are embedded in a ceramic fiber work holder such that the embedded portion is prevented from reaching a temperature during the heat treating operation that produces a hardening action thereon, the non-



hardened portion of the articles being easily stamped or marked with identifying indicia thereon after the heat treating operation.

3,704,872

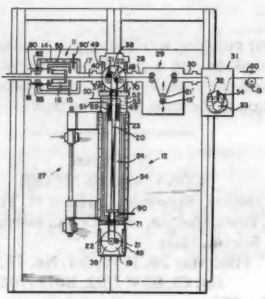
SINTERING FURNACE

Gerhart P. Klein, Manchester, Mass., assignor to P. R. Mallory & Co, Inc., Indianapolis, Ind.

Filed Aug. 21, 1968, Ser. No. 754,393

Int. Cl. F27b 9/28

U.S. Cl. 263—3 **11 Claims**



A horizontal-vertical sintering furnace wherein a workpiece is presintered in the horizontal plane and sintered in the vertical plane. The workpiece makes multiple passes through a vertical sintering means.

3,704,873

METHOD AND APPARATUS FOR COOLING CEMENT CLINKER

Flemming Edvin Jensen, Copenhagen-Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Aug. 18, 1971, Ser. No. 172,857

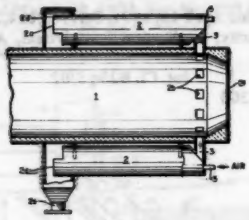
Claims priority, application Great Britain, Sept. 7, 1970, 42,808/70

Int. Cl. F27b 7/38

U.S. Cl. 263—32 C **9 Claims**

Method and apparatus for cooling a rotary kiln product, for example cement clinker, by means of atmospheric air caused to flow countercurrently to the clinker through cooling tubes rotating with and provided in planetary fashion around the

outlet end of the rotary kiln in which the clinker is manufactured, and connected with the kiln through substantially radial



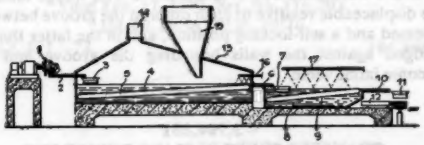
chutes through which the clinker passes into the tubes, additional outside air being introduced directly into the cooler tubes.

3,704,874

APPARATUS FOR COOLING WIRE ROD

Emile Oscar Julien Van den Bulcke, Liege, Belgium, assignor to Cockerill-Ougree-Providence et Esperance, Longdoz en abrege Cockerill, Belgium

Filed July 6, 1971, Ser. No. 159,684
Claims priority, application Belgium, July 3, 1970, 42,888
Int. Cl. C21d 9/56
U.S. Cl. 266—3 R **8 Claims**



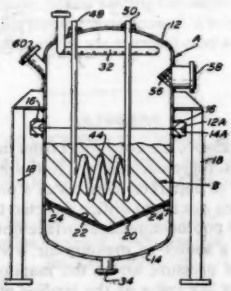
Wire rod emerging from the hot mill is coiled and then moved through an aqueous calcium chloride bath in the form of overlapping nonconcentric loops. The wire rod is sprayed before it leaves the vicinity of the aqueous bath and then goes to a rinsing station from which it passes to a device for coiling it into a roll.

3,704,875

REMOVAL OF MERCURY FROM EFFLUENT STREAMS

Paul Francis Waltrich, Hatboro, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed July 1, 1971, Ser. No. 158,753
Int. Cl. C22b 9/04, 43/00
U.S. Cl. 266—15 **5 Claims**



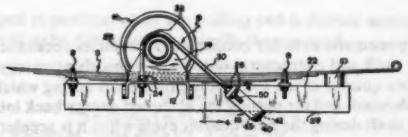
Apparatus for treatment of effluent streams containing very low concentrations and even trace amounts of mercury in both elemental form and as mercuric ion. The stream is passed through a closed vessel having a bed of reactive metal particles, such as Zinc, magnesium and aluminum, and iron, so that the mercury forms an amalgam on the metal surface. The bed is regenerated and the mercury recovered by heating the bed while the vessel is under vacuum and condensing the vaporized mercury. The lower temperature permitted by the reduced pressure and the absence of air precludes oxidation and clumping of the metal granules.

3,704,876

TRACTION DEVICE

Joseph J. Schubeck, Lakewood, Ohio, assignor to Lakewood Industries, Inc., Cleveland, Ohio

Filed Aug. 27, 1970, Ser. No. 67,419
Int. Cl. F16f 1/22
U.S. Cl. 267—66 **6 Claims**



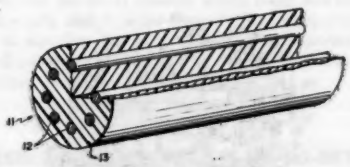
A traction device for maximizing traction between the wheels of a motor vehicle and a road surface including an elongated lever-like bar and a clamping assembly operably connected thereto for clamping the bar to the rear axle housing of the motor vehicle. The clamping assembly includes a pair of elongated loop-like clamp members adjustably mounted on the bar having one end thereof extending generally perpendicular to the central axis of the bar and the opposite end thereof extending in generally angular relation with respect to the central axis of the bar. A saddle-like bracket member connects the opposite ends of the clamp members together and engages the bar in cradle-like relation to maintain maximum clamping engagement of the bar with the axle housing.

3,704,877

MEANS AND METHOD OF ENERGY STORAGE AND DAMPING

John Nunes, 239 Worthen Road, Lexington, Mass.; Arthur L. Geary, 1035 Woodland, Barrington, and John A. Roberts, 459 W. Oakwood Dr., Timberlake, Barrington, both of Ill.

Filed Feb. 22, 1971, Ser. No. 117,316
Int. Cl. F16f 1/06
U.S. Cl. 267—166 **20 Claims**



A one-piece energy controlling device formed of a composite of at least two different materials, having desired energy storage and energy damping characteristics. The preferred devices have a plurality of unidirectional, elongated filaments of one material extending through and embedded in a matrix of a second dissimilar material to form an elongated structure which is set in a spring shape. The devices can be designed for use either as springs to store energy or for use as one-piece spring energy damper to both store energy and/or dissipate energy at different selected load levels.

3,704,878

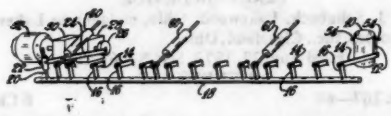
METHOD AND APPARATUS FOR REDUCING TORQUE CHANGES IN ROCK SHAFTS

Richard E. Pitt, Mewark, Ohio, assignor to Owens-Corning Fiberglas Corporation

Division of Ser. No. 821,259, May 2, 1969. This application March 18, 1971, Ser. No. 125,658

Int. Cl. F16f 15/02

U.S. Cl. 267—182 11 Claims



A pneumatic cylinder connected between an eccentric on a rock shaft and a structural support, for absorbing energy during one quarter of the cycle of the rock shaft during which it is decelerated, and for putting the absorbed energy back into the rock shaft during the next quarter cycle when it is accelerated. The pneumatic cylinder is preferably a double acting one with a center port to accomplish the energy absorption and redelivery to the rock shaft, at both ends of the shaft rocking movement. The rate of energy absorption and subsequent reapplication may be controlled by supplying superatmospheric pressure to the center port, and/or by starting the compressive cycle prior to the mid point of the oscillating cycle. The later is accomplished by using a piston--side port valving arrangement wherein the piston has a length that is a sizable proportion of its stroke. The cylinder may be cooled by utilizing a center exhaust port opposite the inlet port, and causing a continual flow through the low pressure end of the cylinder after the piston has proceeded past the inlet port. Bleeds may be provided at opposite ends of the cylinder to reduce the reapplication force of the cylinder, and adjustable chamber means may also be provided on one or both ends of the cylinder for adjusting the absorption rate.

3,704,879

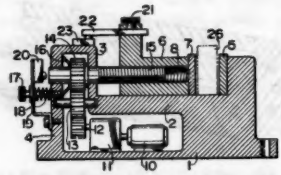
ELECTRIC VISE

Eikichi Nishikawa, Osaka, Japan, assignor to Kyoritsu Manufacturing Company Limited, Osaka, Japan

Filed March 29, 1971, Ser. No. 128,687

Int. Cl. B25b 1/02, 1/18; B23q 3/08

U.S. Cl. 269—222 3 Claims



An electric vice which has a tightening screw driven by an electric motor, a movable jaw moved by the tightening screw, a limit switch actuated by backward axial movement of the tightening screw for determining the tightening force, an adjusting bar fixed to the movable jaw and adjustable in length thereof for operating another limit switch to thereby adjust the interval between the movable jaw and a fixed jaw when the movable jaw is opened.

3,704,880

WORKPIECE POSITIONING ARRANGEMENT

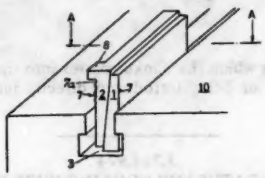
Alfred Gudel, Gaswerkstrasse 26, 4900 Langenthal, Switzerland

Filed April 15, 1971, Ser. No. 134,273

Claims priority, application Switzerland, April 27, 1970, 6341/70

Int. Cl. B23q 3/02

U.S. Cl. 269—303 6 Claims



A work support has a surface provided with at least one groove. A limit stop device is provided for positioning and retaining workpieces on this surface against displacement. The device has a pair of self-locking wedge-members which can be inserted into the groove with at least one of the wedge members projecting out of the groove and beyond the surface so that a workpiece can abut against it. The wedge members are displaceable relative to each other in the groove between a released and a self-locking position, and in the latter they are wedged against the walls bounding the groove and thus become immovable.

3,704,881

TRANSFER SHEET PEELING DEVICE FOR XEROGRAPHIC APPARATUS

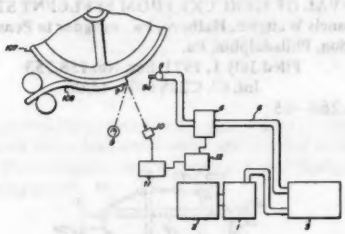
Katsuhide Suda, Ichikawa, Japan, assignor to Xerox Corporation, Stamford, Conn.

Filed May 10, 1971, Ser. No. 141,915

Claims priority, application Japan, May 7, 1970, 45/38293

Int. Cl. B65h 5/06

U.S. Cl. 271—51 1 Claim



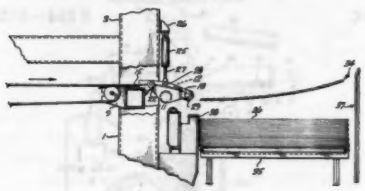
Apparatus to remove the copy sheet from the photoconductive surface of a xerographic machine following transfer of the image thereto. The apparatus consists of a pressure manifold having at least one discharge orifice directed toward a separation point on the photoconductive surface downstream of the transfer station, a source of pressure air, a valve to regulate the admission of pressure air to the manifold, and control means to actuate the valve as the leading edge of the copy sheet approaches the separation point. To obtain accurate response, a photocell type sheet detector is used to detect the leading edge of the copy sheet.

3,704,882

SHEET POSITIONER

Byron B. Brookhyser, Milton, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed March 29, 1971, Ser. No. 128,779
Int. Cl. B65h *29/18*
U.S. Cl. 271—68 4 Claims



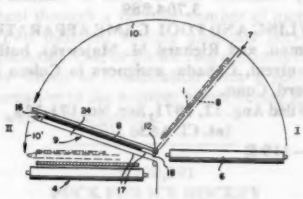
An apparatus particularly suited for the layup of plywood panels operates to position an individual sheet of veneer over an increasing stack of such veneer sheets. The positioning apparatus consists of a flexible sheet metal surface which is actuated by a hydraulic cylinder to impart the proper trajectory to the veneer sheets as they are thrown outwardly from the output edge of the positioner surface.

3,704,883

APPARATUS FOR FORMING A STACK

Gunter Don, Hiddesen, Germany, assignor to G. Siempelkamp & Co., Krefeld, Germany

Filed Feb. 17, 1971, Ser. No. 116,203
Int. Cl. B65h *29/36, 29/40*
U.S. Cl. 271—72 10 Claims



An apparatus for applying an adhesive-coated cover sheet or lamina to a substrate, such as a particulate or fibrous core, has a pair of substantially parallel surfaces which lie next to each other and form beds for the sheet and the substrate, respectively. Pivoted between these surfaces is a fork which can swing through an arc of close to 180° and has tines for lifting the adhesive-free underside of the sheet so that it can swing this sheet to a position above the substrate. A depositing arrangement is pivotal about an axis close to the fork pivot axis through the balance of the 180° arc so that it receives the sheet from the fork and moves it to immediately adjacent the substrate; the depositing device is displaced transversely to the pivot axis to the side, gently placing the sheet on the substrate. The surface of this placing arrangement is formed by a plurality of parallel cables which are spanned over a transversely displaceable guide.

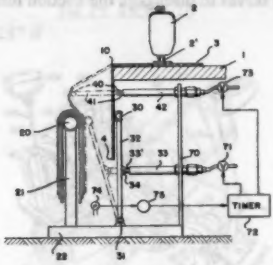
3,704,884

STACKING DEVICE FOR FLEXIBLE WORKPIECES

Karl Nicolay, and Konrad Polimeier, both of Bielefeld, Germany, assignors to Durkoppwerke GmbH, Bielefeld, Germany

Division of Ser. No. 739,733, June 25, 1968, abandoned. This application March 5, 1970, Ser. No. 26,458
Int. Cl. B65n *29/10*
U.S. Cl. 271—85 1 Claim

A succession of work pieces, moving along a work table past a sewing machine, are stacked on a rail beyond a transverse discharge edge of the work table by being allowed to depend from that edge between the table and the rail for at least half of their length, the leading end of each workpiece being clamped in position while the trailing end is thrown across the rail so as to be draped symmetrically therearound.

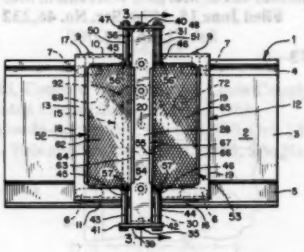


3,704,885

SKIING TEACHING DEVICE

Kazys Raciunas, 1404 49th Ct., Cicero, Ill.

Filed Nov. 2, 1970, Ser. No. 85,970
Int. Cl. A63b *23/04*
U.S. Cl. 272—57 B 16 Claims



A skiing teaching device having a base slidably supporting a platform for transverse movement. A pair of side foot rests are slidable on a pair of parallel rods which are pivotally interconnected at their ends to each other and to the ends of a spring support which in turn is rotatably supported intermediate its ends from a turntable on the platform. The spring has a depending pin operating in an arcuate slot concentric with the turntable and the pin is slidable within a slot in a control arm pivoted at one end on a fixed axis to the sliding platform and guided at its other end by an adjustable pin mounted on the base and controlling the length of the platform travel relative to the base.

3,704,886

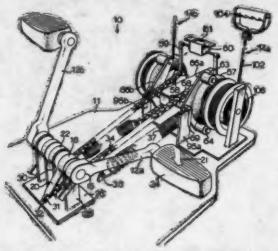
EXERCISING MACHINE WITH SPRING-RETURN PEDALS AND PULL LINES

George Kay, 837 Kipling Avenue, Toronto 18, Ontario, and Alexander Efimov, 21 Heathergien Road, Rexdale, Ontario, both of Canada

Filed Oct. 26, 1970, Ser. No. 83,970
Int. Cl. A63b *21/02*
U.S. Cl. 272—73 8 Claims

An exercising machine having a pair of pedals and a pair of sheaves both mounted for rotation upon a base. A line is wound around each sheave and a handle is connected to the end of each line. The pedals and sheaves are operatively con-

nected to a friction mechanism which opposes turning of the pedals in one direction and unwinding of the lines from the sheaves. A spring is provided for turning the pedals in the opposite direction and for winding the lines on to the sheaves and a clutch serves to disengage the friction mechanism when



the pedals and sprockets are being turned by the spring. The force exerted by the spring mechanism opposing turning of the pedals and sprockets may be manually adjusted. The pedals are restricted from rotating fully about their axis by a pair of stop points formed by the base.

3,704,887

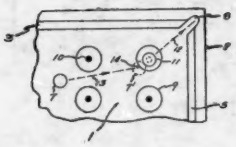
GUIDE FOR AIMING A CUE BALL AT AN OBJECT BALL

Dudley Thorton, 421 S. Morgan, Warrenton, Mo.

Filed June 15, 1970, Ser. No. 46,232

Int. Cl. A63d *15/00*

U.S. Cl. 273—6 **1 Claim**



The present invention relates to a pool and billiard table cover for use in playing and teaching pool and billiards comprising, a table cover constructed of appropriate material, the cover being provided with "spots" and "rings" as best shown in the drawings to assist a player and student in aiming. Each ring concentrically surrounds a spot and is twice the diameter of a standard pool ball.

3,704,888

APPARATUS FOR ORIENTING BOWLING PINS AND SEPARATING THE BALL AND PINS

Josef Kleineaschoff, and Brunhilde Kleineaschoff, both of Sendenhorst, Germany, assignors to Getex Consult AG, Chur, Switzerland

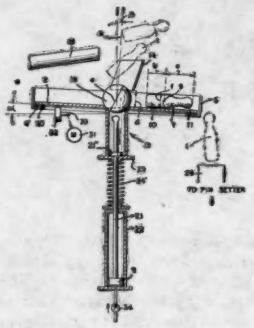
Filed July 22, 1971, Ser. No. 165,289

Claims priority, application Germany, July 24, 1970, P 20 36 849.4

Int. Cl. A63d *5/02*

U.S. Cl. 273—43 R **10 Claims**

An apparatus for orienting bowling pins and separating the ball from the pins has a rotating disk which lies at a slight angle to the horizontal and which is surrounded by a non-rotatable collar formed at the low side of the disk with an aperture. The width of the aperture is less than the distance from the light pin end to the pin's center of gravity and less than the distance from this center of gravity to the heavy pin end so that pins traveling around the inside of the collar due to the disk rotation will fall out through the aperture if they are traveling heavy end first. For the other pins a catch plate is provided which reverses their leading ends so that they can drop out on their next passage past the aperture. A deflector is provided



spaced above the disk by a distance smaller than the ball diameter and greater than the pin thickness to guide balls into a raisable seat in the disk's center. A hydraulic cylinder can raise this seat and displace the ball from the seat in the raised condition into a ball-return chute.

3,704,889

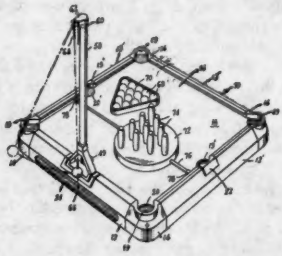
BOWLING AND POOL GAME APPARATUS

Donald Huffman, and Richard M. Majewski, both of Westmount, Montreal, Canada, assignors to Coleco Industries, Inc., Hartford, Conn.

Filed Aug. 12, 1971, Ser. No. 171,205

Int. Cl. A63d *3/02*

U.S. Cl. 273—119 R **6 Claims**



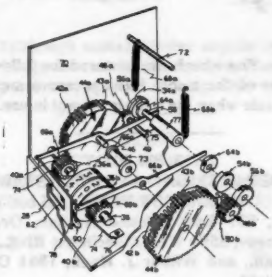
A combination pool and bowling game employs a guide member that is pivotally mounted on a table having ball-receiving pockets at spaced locations thereabout. The guide member is provided with an open-ended chute adjacent to one end thereof on which a movable cue ball may be supported. Additionally a tethered impact member is suspended from a stanchion on the guide member. When properly swung, the impact member may collide directly with the cue ball to propel it onto the playing surface through the chute, and the angular position of the chute will determine the direction of movement of the cue ball onto the playing surface. The tethered impact member may be used in bowling by pivoting the guide member.

3,704,890

DEVICE FOR DISPLAYING SYMBOLS IN A PSEUDO-RANDOM SEQUENCE

Fredric E. Zucker; Joseph Kaswer, Jr., both of Stamford, Conn., and Thomas S. Wilczynski, Trumbell, Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Dec. 28, 1970, Ser. No. 102,005
Int. Cl. A63f 5/04
U.S. Cl. 273—143 R 3 Claims



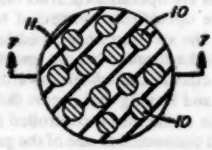
A device for displaying numbers of a pseudo-random sequence. For each change in the number to be displayed, a mutilated gear is rotated by a suitable mechanism through a predetermined angular displacement. For each such rotation, a variable number of teeth of the mutilated gear drive a number wheel through a variable number of numeral display positions. Two different locking elements prevent rotation between actuations. One of the locking elements carries a window shutter which in combination with a second window blocks observation of the number wheel during actuation and reveals the wheel when indexed.

3,704,891

PUCK FOR ICE HOCKEY

Ronald L. Chiarelli, 625 Somerset St. West, Ottawa, Ontario, Canada

Filed Feb. 20, 1970, Ser. No. 16,627
Claims priority, application Canada, Aug. 29, 1969, 060,793
Int. Cl. A63b 67/00
U.S. Cl. 273—128 R 1 Claim



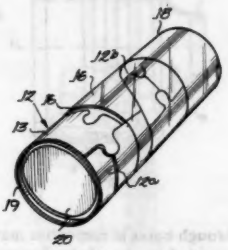
The invention relates to a hockey puck which is weighted to provide a practice puck to improve the player's shooting strength and accuracy and his passing and puck control. This is accomplished by incorporating into the resilient body material of the puck a material having a specific gravity greater than that of the resilient material to provide the finished puck with a weight greater than 5.5 to 6.0 ounces. The resilient body material may be rubber or like material and the material incorporated may be in the form of a core, or plates or discs or spheres, or may be particulate or granular.

3,704,892

JIGSAW PUZZLE

Donald W. Moravick, 625 N. Michigan Ave., Chicago, Ill., and Leon M. Levy, 2047 N. Dayton St., Chicago, Ill.

Filed April 22, 1971, Ser. No. 136,360
Int. Cl. A63f 9/10
U.S. Cl. 273—157 R 12 Claims



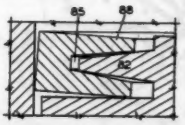
A jigsaw puzzle is provided comprising a generally cylindrical support, a jigsaw puzzle formed into the shape of a cylindrical sleeve overlying the support and divided into a plurality of interrelated jigsaw puzzle elements and a transparent plastic sleeve in overlying and sliding engagement to said puzzle and underlying support. A process for forming and assembling the puzzle is also provided which includes the steps of applying a puzzle in sheet form to the surface of a cylindrical support member, the puzzle being applied in conjunction with a transparent plastic sleeve element which overlies and retains the puzzle in overlying and conforming relationship to the support element.

3,704,893

PISTON RING

Donald C. Hill, Concord Township, St. Louis County, Mo., assignor to Eaton Corportion, Cleveland, Ohio

Continuation-in-part of Ser. No. 865,593, Oct. 13, 1969, abandoned. This application Sept. 4, 1970, Ser. No. 69,737
Int. Cl. F16j 9/20
U.S. Cl. 277—171 17 Claims



An internal combustion engine piston having a live headland ring whose cross-section is imbalanced by differentiating it from a circumscribing circle whose diameter equals the maximum diagonal dimension to exterior corner points (which, in the case of a ring having a blunted corner or tapered face, will be the virtual corner point) of the ring when free and unconfined, so that more material is omitted within the inner-upper and outer-lower quadrants than within the inner-lower and outer-upper quadrants, or vice versa, depending upon the sense in which torsional twist is desired when the ring is contracted to cylinder diameter.

3,704,894

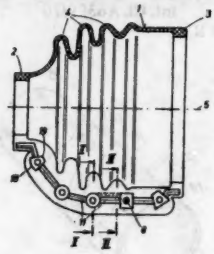
BELLOWS SLEEVE

Wolfgang Didszuhn, Weckenweg 44, 8081 Oberhaunstadt, Germany

Filed Nov. 1, 1971, Ser. No. 194,670
Claims priority, application Germany, Nov. 4, 1970, P 20 54 207.8
Int. Cl. F16j 3/00
U.S. Cl. 277—212 FB 12 Claims

The bellows sleeve is provided with a slot extending at least partially and longitudinally there through. Adjacent to the slot

there are provided flanges which comprise one or more tongues with a wedge shaped cross-section as well as wedge-shaped grooves into which the tongues fit. The flanges are clamped together, for example, by means of screws extending



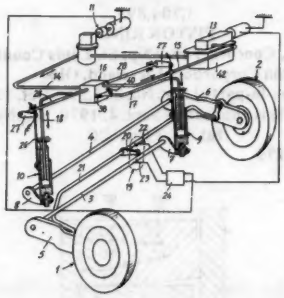
with a press fit through bores in respective material accumulations or lands provided in one of the flanges and respective recesses into which the lands fit in the other flange. Preferably, the lands fit into the recesses also with a press fit.

3,704,895

TRIM-CORRECTING DEVICES FOR VEHICLES

Jacques Remaud, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, France and Automobiles Peugeot, Paris, France

Filed Oct. 21, 1970, Ser. No. 82,696
Int. Cl. B60g 21/06
U.S. Cl. 280—124 F 7 Claims



A trim-correcting device for automobile vehicles, in which each wheel suspension of at least one of the front or rear sets of wheels is coupled to the vehicle body through the intermediary of a hydraulic jack, while a detection device for the height of the chassis with respect to the ground, with a time-delay action, co-operates with means for supplying fluid under pressure to the jacks and with means for discharging said jacks, and a distributor for fluid under pressure is provided between the said supply means and the said jacks, characterized by the fact that the distributor of fluid under pressure comprises a control responsive to the differential state of the said jacks.

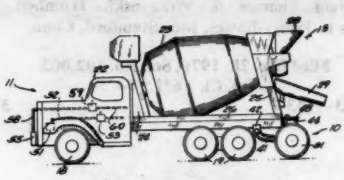
3,704,896

AUXILIARY STEERABLE WHEELS FOR VEHICLES

William H. Buelow, Brookfield, Wis., assignor to Rex Chainbelt Inc., Milwaukee, Wis.

Filed May 7, 1969, Ser. No. 829,155
Int. Cl. B62d 61/12
U.S. Cl. 280—81 A 6 Claims

A truck mixer, having a concentrated load and including conventional forward steering wheels and rear drive wheels, is provided with additional wheels on an auxiliary axle below the frame of the truck. A contained fluid at a preselected constant pressure determines the auxiliary support of the truck on said axle to provide the desired distribution of the truck load in a



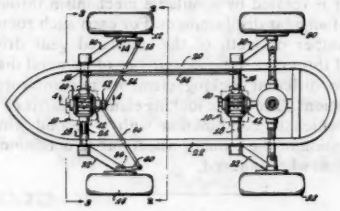
known manner. The wheels are castered for following the forward directions of the truck. Fluid pressure means provides for raising the axle when the wheels are not in use.

3,704,897

COMBINDED STEERING AND ROLL STABILIZING MEANS FOR VEHICLES

Walter Bagge, 837 East Almond Avenue, Orange, Calif.; George F. Bagge, 3500 West Manchester Blvd., No. 298, Inglewood, Calif., and Wilbur J. Hank, 1861 Omega Drive, Santa Ana, Calif.

Filed Oct. 9, 1970, Ser. No. 79,534
Int. Cl. B62d 3/02
U.S. Cl. 280—91 3 Claims



A vehicle is shown with spaced pairs of coaxial torque rods at right angles to its longitudinal axis and located forwardly of the front wheels and rear wheels. The outer ends of the front rods carry respective arms connected to the front wheels, and the outer ends of the other rods carry arms that are connected to the rear wheels. The opposed ends of each pair of rods carry segment gears which mesh with respective gears of a gear box. For the front wheels, the torque rods are operated through the gear box from the steering wheel. The torque rods for the back wheels are operable via arms that are linked by a rod and which are operatively connected to the respective gear boxes. When the steering wheel is turned so the vehicle negotiates a curve, the torque rods are operated in directions to tilt or lean the chassis and wheels inwardly so as to offset the outward sway and leaning that occurs due to the centrifugal force. The angle of the turn is controlled through the front gear box via a shaft connected to one of the gears and to which are connected the inner ends of steering rod links. The weight of the vehicle is distributed on all four wheels at all times.

3,704,898

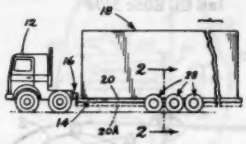
VEHICLE AXLE SUSPENSION

Kenneth J. Schmidt, Thurston, Oreg., assignor to General Trailer Co., Inc., Springfield, Oreg.

Filed Feb. 3, 1971, Ser. No. 112,135
Int. Cl. B60g 3/12
U.S. Cl. 280—124 R 5 Claims

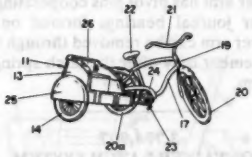
An axle suspension in a vehicle including a rock structure pivoted to the vehicle's frame, which structure, adjacent its

free end, carries an axle. An extensible-contractible air bag in the suspension acts between the free end of the rock structure and the vehicle frame. The air bag is mounted in such a way



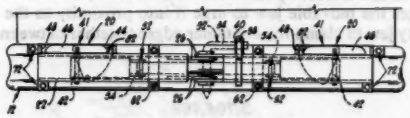
that minimal (although some) relative angular movement occurs between its opposite ends with the extension and contraction of the bag that accompanies rocking of the rock structure.

3,704,899
BICYCLE SIDE CAR
Eldred L. Clem, II, 174 Westwood Road, Columbus, Ohio
Filed July 23, 1970, Ser. No. 57,483
Int. Cl. B62k *27/04*
U.S. Cl. 280—203 **3 Claims**



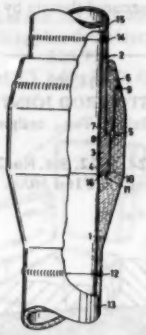
A side car for a bicycle. This side car is supported by a frame that mounts to the frame of a bicycle and not to the bicycle axle, thus because the frame of the side car is hinged to the mounting frame which is attached to the bicycle, the bicycle can tilt independently of the side car. The axle does not extend through the side car. The outer wheel of the side car is supported on a stub axle secured only to the outer part of the side car frame. The moulded body of the side car is supported by the frame. Moulded integrally with the side car is a fender for the side car wheel. The side car when constructed of a fiber glass layup is moulded in two parts; the lower part, including the fender for the side car wheel, has an opening through the bottom and back of the seat portion thereof, and a separately moulded seat fits snugly into and covers the opening in the main portion of the side car. In the vacuform moulding process, a single unitary piece of moulded material forms the entire side car including the seat.

3,704,900
TOW HITCH
Jerome J. Gerber, Murdock, Kans.
Filed Aug. 24, 1970, Ser. No. 66,461
Int. Cl. B60d *1/00*
U.S. Cl. 280—491 D **3 Claims**



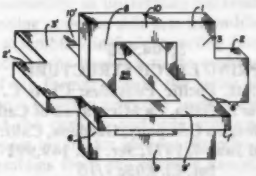
This invention is a tow hitch structure mountable on the front end portion of a vehicle. More particularly, this invention is a tow hitch structure having a pair of jointed arm members mounted on the front of a vehicle and having a locking means to hold the arms fixed in position, either extended for use or retracted for stowing.

3,704,901
PIPE JOINT CONNECTOR
Fritz Borner, Kelsterbach, Germany, assignor to Messer Griesheim GmbH, Frankfurt/Main, Germany
Filed Feb. 16, 1971, Ser. No. 115,418
Claims priority, application Germany, March 4, 1970, P 20 10 013.4
Int. Cl. F16l *13/02*
U.S. Cl. 285—173 **8 Claims**



Pipes of varying material are connected together by a connection wherein a ring on one pipe extends beyond a collar on the other pipe with a slot created between the ring and the other pipe. An intermediate ring, preferably of the same or similar material as the outer ring, is slipped into the slot.

3,704,902
COLLAPSIBLE LINK
George Edward Moore, Sr., and George Edward Moore, Jr., both of 398 Mundy Street, Coquitlam, British Columbia, Canada
Filed Nov. 25, 1970, Ser. No. 92,654
Int. Cl. F16d *19/00*
U.S. Cl. 287—64 **11 Claims**

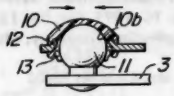


A collapsible link of simple construction wherein transverse members have axial recesses which interengage with one another at separated points along the axis of the link. A key member insertable into the link, is adapted to prevent the accidental disengagement of the elements of the link.

3,704,903
SOCKET MOUNTING STRUCTURE OF BALL-AND-SOCKET JOINT USED FOR COUPLING LINK MEMBERS FOR DRIVING A WINDSHIELD WIPER FOR VEHICLES
Isao Ito, Handa, Japan, assignor to Nippondenso Kabushiki Kaisha, Aichi-ken, Japan
Filed April 8, 1971, Ser. No. 132,506
Claims priority, application Japan, April 10, 1970, 45/35082
Int. Cl. F16c *11/06*
U.S. Cl. 287—90 R **1 Claim**

An improved socket mounting structure of a link member in a ball-and-socket joint used for coupling link members for driving a windshield wiper for vehicles. An integral annular

projection is formed along the peripheral edge of a socket mounting hole formed in the link member, and the socket is

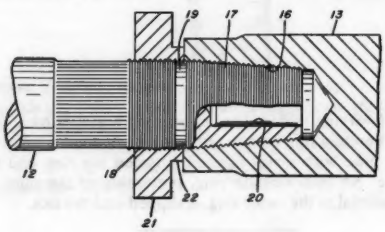


mounted in said mounting hole concurrently with molding of said socket and tightly secured therein by said annular projection.

3,704,904
PISTON ROD JOINT

Michael L. Rizzone, Dallas, Tex., assignor to United States Steel Corporation

Filed Jan. 24, 1972, Ser. No. 220,122
Int. Cl. F16d 1/00
U.S. Cl. 287—125 **3 Claims**

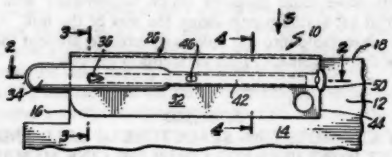


A joint for connecting a crosshead extension rod to a piston rod end-to-end. The piston rod has an integral tapered threaded pin at its end, a straight threaded portion inwardly of the pin, and an undercut section between the pin and the straight threads. The extension rod has a tapered threaded bore receiving the pin. A lock nut is engaged with the straight threads and tightened against the end face of the extension rod to maintain the undercut section under tension throughout the working cycle.

3,704,905
SPRING LATCH STRUCTURE

Leonard Rosenblatt, Pacific Palisades; Chris C. Horn, Gardena, and Mario S. Gallo, La Mirada, all of Calif., assignors to Globe Illumination Company, Gardena, Calif.

Filed June 4, 1971, Ser. No. 149,991
Int. Cl. E05c 1/10
U.S. Cl. 292—175 **6 Claims**

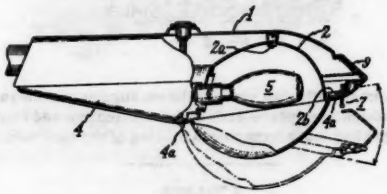


A spring latch structure may be constructed utilizing as a part of the structure a support having a corner and a slot extending between its surfaces adjacent to the corner. With this structure a combination bolt or latch spring retainer fits around the support. This retainer has projections extending int o the slot so that the slot serves to guide the movement of the retainer. A spring is located within the slot between an end of the slot and at least one of these projections so as to normally bias the retainer to an extended position in which a latch element on the retainer extends from the support.

3,704,906
LATCH DEVICE

Jonathan C. Abercrombie, East Flat Rock, N.C., assignor to General Electric Company

Filed Sept. 14, 1970, Ser. No. 71,906
Int. Cl. E05c 5/04
U.S. Cl. 292—247 **10 Claims**

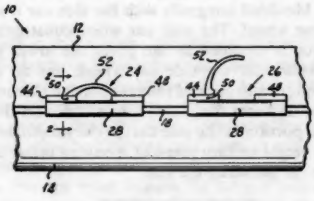


Latch device for street lighting luminaires for latching a refractor closure to the luminaire housing. Latch lever arm extending through opening in front of closure member has latch spring detachably connected to it. The spring engages an integrally formed catch on the front surface of the luminaire housing. The lever arm has pivot pins cooperating with spaced upper and lower journal bearings formed on the closure member. The lever arm can be removed through the inner side of the closure member only after the latch spring is detached from the lever arm.

3,704,907
CONTAINER LATCH SYSTEM

Paul R. Gley, Hillsdale, N.J., assignor to Rex Chainbelt Inc., Milwaukee, Wis.

Filed Jan. 19, 1971, Ser. No. 107,789
Int. Cl. B25b 5/02, 5/08
U.S. Cl. 292—257 **7 Claims**



A latch assembly for releasably clamping elongated edge flanges of a container in which a support formed with a stationary elongated jaw for engaging one of the edge flanges carries a movable elongated jaw for engaging the other edge flange and a toggle lever handle for pivotal movement between an open position at which said movable jaw is released and a closed position at which a cam pin on the lever engages the movable jaw to urge it into proximity to the stationary jaw to clamp the container edges together between the jaws.

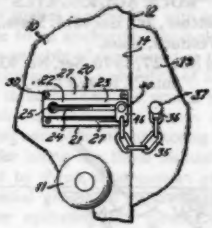
3,704,908
DOOR CHAIN LOCK

Jerome Schwartz, Philadelphia, Pa., assignor to Taylor Lock Company, Philadelphia, Pa.

Filed April 15, 1971, Ser. No. 134,360
Int. Cl. E05c 17/36
U.S. Cl. 292—264 **6 Claims**

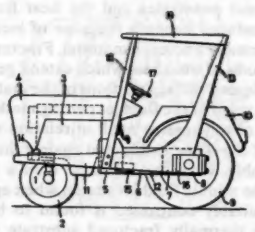
A door chain lock wherein a headed connector is

detachably engageable with its head passing removably through an enlarged portion of a receiver slot, there being pro-



vided a guard for occupying the space adjacent to the connector to prevent entry of a tampering tool.

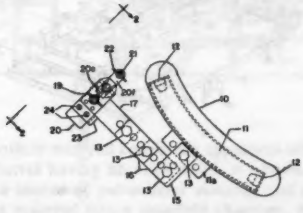
3,704,909
TRACTOR
Oswald May, Bonn, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Koln-Deutz, Germany
Filed March 3, 1970, Ser. No. 16,172
Int. Cl. B62d *25/06*
U.S. Cl. 296—102 **10 Claims**



A tractor type vehicle in which frame parts along the sides of the vehicle have upstanding arms at the sides of the driver's position to protect the driver if the vehicle capsizes.

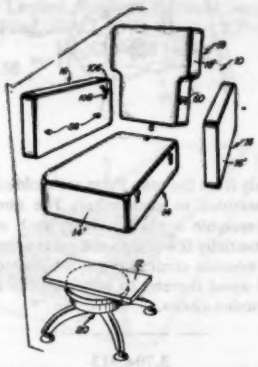
The frame parts are resiliently mounted on the vehicle and fluid operable bolts are provided responsive to fluid pressure to lock the frame parts to the vehicle. The vehicle may carry a loading implement with lift cylinders and a single pressure source is provided for actuating the bolts and the lift cylinders. A valve between the source and the bolts controls the bolts and another valve between the bolts and the lift cylinders provides for actuation of the lift cylinders only when the bolts are actuated.

3,704,910
ADJUSTABLE TORSO SUPPORT ATTACHMENT FOR WHEEL CHAIRS AND THE LIKE
Walter F. Willcott, 631 Kickapoo, Leavenworth, Kans.
Filed Aug. 27, 1969, Ser. No. 853,551
Int. Cl. A47c *7/54*; A47l *5/00*
U.S. Cl. 297—411 **3 Claims**



A cushioned torso engaging member is adapted to be mounted to one or the other of the handles of a conventional wheel chair or the like either alone on in pairs, by means of an assembly of a handle clamp and linked arms which provide both for angular, elevational and dimensional adjustment of the position of the torso engaging member relative to the wheel chair handle.

3,704,911
KNOCKDOWN CHAIR
Joseph Milakovich, 5120 Comanche, N.E., Albuquerque, N. Mex.
Continuation-in-part of Ser. No. 858,489, Sept. 16, 1969, Pat. No. 3,615,154. This application March 18, 1971, Ser. No. 125,720
Int. Cl. A47c *7/00*, *4/02*
U.S. Cl. 297—440 **7 Claims**



A seating structure including readily assembled and disassembled components with each of the components to be upholstered provided with upholstered portions consisting of suitably cushioned upholstery covers secured on the upholstered portions by means of coacting "Velcro" strips completely hidden from view when the components of the seating structure are in assembled relation. The components of the seating structure include a base supported horizontal seat cushion assembly, an upstanding backrest assembly and a pair of upstanding opposite side arm assemblies. The backrest and cushion assemblies include coacting latching means for releasably latching the backrest to the cushion assembly upon movement of the former toward the latter along a predetermined path to a position operably juxtaposition said cushion assembly and the cushion and side arm assemblies include coacting support means for stationarily releasably supporting the arm assemblies from the cushion assembly in operative juxtaposition relative thereto. In addition, the arm assemblies and the backrest assembly include coacting structure releasably anchoring a position of the backrest assembly spaced above its lower end to the rear end portions of the arm assemblies against rearward movement relative to the latter. A first form of the invention further includes coacting locking structure carried by the seat cushion assembly, the arm assemblies and the backrest assembly for locking the arm assemblies in their supported positions juxtaposition the seat cushion in response to movement of the backrest portion toward its supported position operably juxtaposition the seat cushion assembly.

3,704,912
MULTI-COMPONENT MOLDED PLASTIC CHAIR
Richard S. Bezark, 190 South Avenue, Glencoe, Ill.
Filed Jan. 12, 1971, Ser. No. 105,897
Int. Cl. A47c *4/02*, *7/00*
U.S. Cl. 297—445 **17 Claims**

A plastic chair assembled from injection molded parts and having the appearance of a chair fabricated of wood. The

chair includes integrally molded multi-component parts. The chair includes a seat molded to define bores to receive molded leg ends and molded to define bores to receive molded spindle ends. A plurality of the spindles are integrally molded with a rail and provide pins which enter the spindle bores simultaneously and at an angle different from that at which the spindles

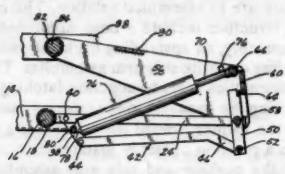
project upwardly from the seat. Parts are molded to be quickly keyed and assembled to each other. The number of parts necessary to assemble a plastic chair, such as a Captain's chair, are substantially fewer than the parts necessary to make a comparable wooden chair and are molded to simulate the appearance of wood thereby to eliminate the finishing steps required for wooden chairs.

3,704,913

BOLSTER HOIST FOR A DUMP VEHICLE

Donald E. Schuster, 805 S. 9th Street, Humboldt, Iowa

Filed July 28, 1971, Ser. No. 166,840
Int. Cl. B60p *1/20*
U.S. Cl. 298—22 J **7 Claims**



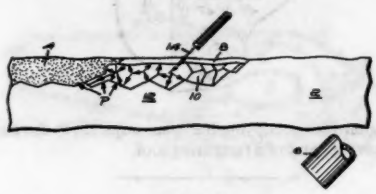
A bolster hoist for a dump vehicle comprising a first support pivotally secured to the vehicle frame and having first and second arms extending rearwardly therefrom. Third and fourth arms are pivotally secured at their rearward ends to the rearward ends of the first and second arms and are secured at their forward ends to a second support pivotally secured to the dump body. First and second links are pivotally secured at their upper ends to the first and second arms at the forward ends thereof respectively and have the forward ends of first and second bars pivotally secured at their lower ends. First and second levers are pivotally secured at their lower ends to the rearward ends of the first and second bars and are pivotally connected intermediate their ends to the pivotal connection of the first, third and second, fourth arms. A hydraulic cylinder is pivotally connected at its base end to the first and second links intermediate the ends thereof and is pivotally connected at its rod end to the upper rearward ends of the third and fourth arms. A cross bar extends between the rearward ends of the third and fourth arms and is engaged by the upper ends of the first and second levers during the initial extension of the rod from the cylinder to increase the leverage applied to the third and fourth arms.

3,704,914

METHOD OF FLUID JET CUTTING FOR MATERIALS INCLUDING ROCK AND COMPOSITIONS CONTAINING ROCK AGGREGATES

Ralph Andrew Fletcher, Jr., Harvard, Mass., assignor to H. E. Fletcher Co., Westford, Mass.

Filed Nov. 27, 1970, Ser. No. 93,366
Int. Cl. E21c *37/16*
U.S. Cl. 299—14 **17 Claims**



Materials including rock and compositions containing rock aggregates are subjected to a fluid jet cutting operation utilizing a first stage high-temperature, high-flux heat source and a second stage high-pressure hydraulic jet of water. The preferred heat source is a flame. In the first stage, the flame impinges upon a surface to be cut and material at the surface is rapidly heated by the flame to a state of massive incandescence. As heat penetrates and the heat front advances, there is also produced beneath the zone of incandescence a substrate of thermally fractured material. Fractures in the substrate define planes of weakness which extend generally parallel to the incandesced surface portions of the material.

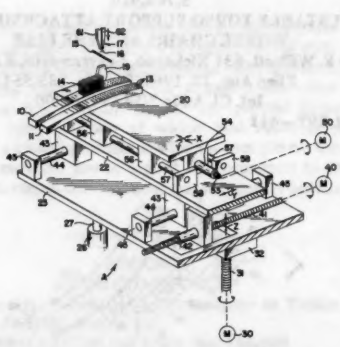
In the second stage of the fluid jet cutting method, a hydraulic jet of water of a diameter small in relation to the area of impingement of the flame is directed against the incandesced surface, preferably while the substrate is in a thermally activated state. The minute fluid jet stream when applied with its impact force suitably controlled is found to be capable of penetrating the thermally fractured substrate and reaching into the planes of weakness above indicated. Water thus injected into the substrate and moving along the planes of weakness almost instantly exerts a hydraulic pressure from within outwardly to remove substrate material in a novel manner.

3,704,915

METHOD AND APPARATUS FOR ANCHORING BRISTLE BUNDLES IN A BRUSH BLOCK

Arthur T. Schofield, Becksville, Ohio, assignor to The Manufacturers Brush Company, Guyahoga County, Ohio

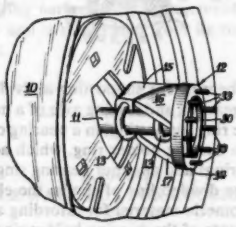
Filed March 4, 1971, Ser. No. 121,061
Int. Cl. A46d *3/04*
U.S. Cl. 300—21 **8 Claims**



A method and apparatus for locating and indexing brush blocks relative to an operating head, the blocks having a plu-

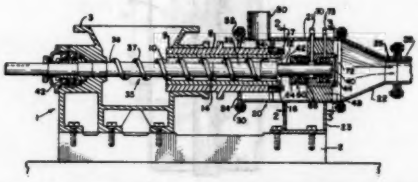
rality of holes formed therein for anchoring bristle bundles or tufts. Each block is moved intermittently at spaced time intervals to locate each hole therein sequentially in a predetermined position in spatial registration with an operating head and bristle bundle to be anchored. The holder for the brush block or blocks is capable of compound or three dimensional movement to accommodate a plurality of locations within a space defined by three dimensional spatial limits along three mutually perpendicular axes. This serves to accommodate brush blocks having curved bristle anchoring faces. The movement of the holder along the three mutually perpendicular axes is controlled by three pulse motors and by means for generating sequential groups of predetermined numbers of driving pulses for operating the motors intermittently at spaced time intervals so as to move the holder between anchoring operations through a predetermined two or three dimensional plot corresponding to the hole locations.

3,704,916
FLANGELESS HUB FOR TRACTOR
William J. Dietrich, Congerville, Ill., assignor to Dietrich Manufacturing Company, Goodfield, Ill.
Filed Oct. 2, 1970, Ser. No. 77,424
Int. Cl. B60b *27/06*
U.S. Cl. 301—1 **2 Claims**



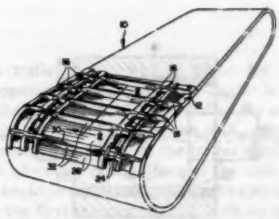
An improved structure for attaching an additional wheel to the axle of a tractor is disclosed wherein two side strengthening ribs are provided extending between an annular connecting collar to which the additional wheel is mounted and a mounting block having a bearing surface for receiving the axle and mounting the hub to it. The ribs add strength and bulk to the hub and prevent fracture.

3,704,917
PULVERULENT MATERIAL CONVEYING APPARATUS
Donald S. Boyhont, Nazareth, and Marvyn L. Souders, Allentown, both of Pa., assignors to Fuller Company
Filed Oct. 14, 1970, Ser. No. 80,727
Int. Cl. B65g *53/08, 53/48*
U.S. Cl. 302—50 **8 Claims**



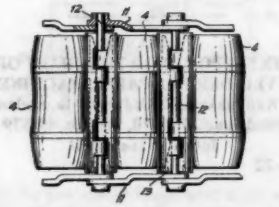
A pulverulent material conveying apparatus which includes a hollow barrel having an inlet which is adapted to be connected to a source of pulverulent material and an outlet for discharging material into a manifold chamber. A screw conveyor is rotatably mounted in the barrel for advancing the material through the barrel. Each end of the screw is mounted in bearings. The end of the screw near the outlet of the barrel is tapered so that the pulverulent material is compressed to form a fluid seal at the outlet of the barrel. A check valve is slideably mounted on the screw shaft to restrict the flow of material from the barrel into the manifold chamber. Air under pressure is supplied to the manifold chamber where it aerates the pulverulent material and entrains the material to the outlet of the manifold chamber and the conveying line. The outlet of the manifold chamber is coaxial with the barrel, and the air under pressure is supplied to the manifold chamber so that a substantially complete circle of air under pressure is formed around the outlet of the barrel.

3,704,918
ENDLESS TRACK
Jules Perreault, Sherbrooke, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada
Filed Jan. 22, 1970, Ser. No. 4,896
Int. Cl. B62d *55/24*
U.S. Cl. 305—38 **7 Claims**



An improved endless track for use on track laying vehicles particularly snowmobiles, the track consists of an endless belt of rubber or the like with a large number of transverse traction ribs whose active faces present an elongated planar surface at an angle with respect to the normal to the plane of the endless belt.

3,704,919
AXIAL ANTIFRICTION BEARING
Georg Titt, Obere Vorstadt 9, D-8358 Vilshofen, Germany
Filed Dec. 7, 1970, Ser. No. 95,807
Claims priority, application Germany, Dec. 8, 1969, P 19 61 468.7
Int. Cl. F16c *29/06, 33/50, 33/36*
U.S. Cl. 308—6 C **11 Claims**



An axial roller bearing assembly adapted to move parallel to the axis of a shaft which carries the assembly. The shaft is circumferentially enclosed at least in part by a sleeve member which extends more than half way around the shaft and which is spaced therefrom to define between the sleeve member and the shaft longitudinal paths of movement for a plurality of rows of roller bodies. Each row of roller bodies is guided for movement along an endless path extending between the sleeve member and the shaft, around the ends of the sleeve member, and along the exterior of the sleeve member. The endless path of movement for each row of roller bodies has a load-carrying

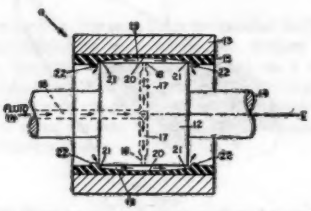
zone situated between the sleeve member and the shaft and a return zone situated at the exterior of the sleeve member. Each of the roller bodies has a central elongated portion of hourglass configuration conforming substantially to the circumferential curvature of the shaft, and this central elongated portion is situated between a pair of tapered end portions of each roller body, these end portions being symmetrically arranged with respect to the central elongated portion. The end portions and the central elongated portion of each roller body are interconnected by a pair of symmetrically arranged cylindrical portions which directly engage the external surface of the shaft and the internal surface of sleeve member at the loadcarrying zone of each endless path for each row of roller bodies.

3,704,920

COMBINATION CLAMPING AND BEARING SYSTEM

Coda Hoong-Tao Pan, Latham, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Jan. 25, 1971, Ser. No. 109,483
Int. Cl. F16c 17/16
U.S. Cl. 308—9 11 Claims



A self-acting combination clamping and bearing system is provided which comprises two members having confronting bearing surfaces, one of which is a bearing surface of suitable elastomeric material. The confronting surfaces of the two members are arranged in self-opposed relationship to constrain relative movement of the members. Passages are provided for the supply of fluid lubricant under pressure to the interface of the confronting surfaces. The lubricant pressure deforms the surface of the elastomeric member and forms a bearing profile so that the members are thereafter supported for relative movement on a load supporting film of fluid lubricant.

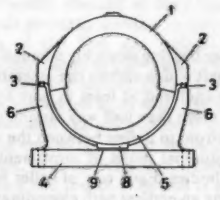
There is also disclosed a particular application of the invention in which the combination clamping and bearing system is used to support the two-degrees-of-freedom rotor on the shaft of a directional gyroscope of an assault weapon.

3,704,921

BEARING BOX SUPPORT FOR THE SHAFT OF A DRYING CYLINDER IN A PAPER MACHINE

Osmo Skytta, Kauppakatu 27 C, Jyvaskyla, Finland

Filed June 25, 1970, Ser. No. 49,679
Int. Cl. F16c 29/00
U.S. Cl. 308—22 1 Claim



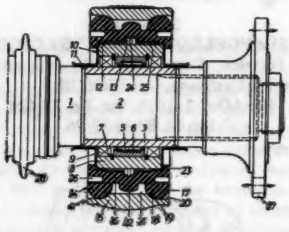
A bearing box support for a paper machine is shown. The structure includes a pair of upwardly extending support arms which carry the bearing box. Upon the mating surfaces of the support arm and bearing box a self-lubricating coating is provided. Structure is provided to permit the bearing box to move in an axial direction but not in a rotatable manner.

3,704,922

INTERMEDIATE BEARING FOR SUPPORTING A DIVIDED LINE OF DRIVE SHAFTS IN A MOTOR VEHICLE

Hans-Joachim Kleinschmidt, Im Schee 10, 43 Essen-Steele, and Josef Schultenkampger, Steubenstrasse 69, 43 Essen, both of Germany

Filed Aug. 31, 1970, Ser. No. 68,110
Claims priority, application Germany, Sept. 4, 1969, P 19 44 919.5
Int. Cl. F16c 35/04
U.S. Cl. 308—26 7 Claims



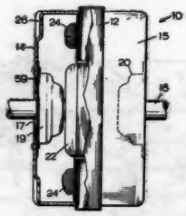
Intermediate bearing for supporting a divided line of drive shafts between gearbox and driving axle of a motor vehicle includes an elastic ring supporting, in a bearing casing securable to the vehicle, a bearing holder ring, which accommodates a pair of packing rings and an inner bearing ring pressable onto a lay shaft of the divided line of shafts, the elastic ring being formed of elastomeric material for affording axial, radial and angular movements of the bearing holder ring relative to the bearing casing, the elastic ring being shaped as a tire having a substantially cylindrical main body enclosing the bearing holder ring and having at both axial ends thereof a respective ring of radially extending bracing projections prestressed by the bearing casing, and an annular rib located between the rings of bracing projections and being radially spaced from the casing.

3,704,923

BEARING ASSEMBLY FOR ELECTRIC MOTORS

Andrew Rajna, Kitchener, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada

Filed Oct. 18, 1971, Ser. No. 190,053
Int. Cl. F16c 35/00, 33/66
U.S. Cl. 308—132 7 Claims



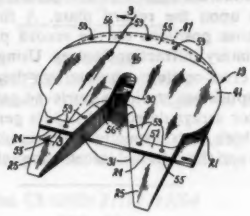
A spherical bearing assembly for an electric motor is disclosed, constructed such that the axial location of the shaft is not dependent upon the end bell or end wall of the electric motor. By affixing the bearing assembly to the end bell or end wall of the motor after all other operations have been performed on the latter, a true axial alignment of the shaft with the field core can be attained without the risk that subsequent operations will cause misalignment.

3,704,924

REMOVABLE WEAR PLATE FOR FIFTH WHEEL

Randy W. Lowry, 3373 E. Fairmont, Fresno, Calif.

Filed March 12, 1971, Ser. No. 123,578
Int. Cl. B62d 53/08
U.S. Cl. 308—136 3 Claims



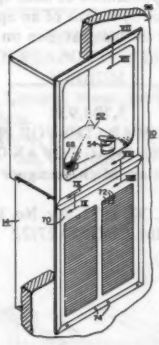
A replaceable wear plate for the fifth wheels of automotive vehicles having engaged bearing surfaces. The wear plate is a substantially flat sheet of disposable material having a low coefficient of friction releasably secured in fixed position on one of the bearing surfaces for engagement with the other bearing surface and is removable from its respective surface for replacement.

3,704,925

REVERSIBLE WALL BOX FOR RECESSED WATER COOLER

Eugene W. Scott, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 26, 1971, Ser. No. 119,147
Int. Cl. A47b 77/06, 77/08, 67/02
U.S. Cl. 312—228 6 Claims



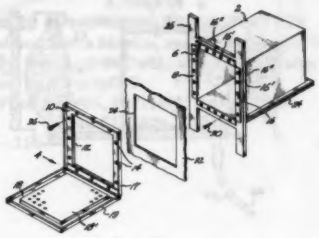
The invention provides a recessed water cooler for installation in the wall of a building, with that portion of the box like cabinet structure that houses the refrigeration components such as the condenser and compressor being mounted in the assemblage for the water cooler in a manner so that it may be reversed and then either mounted flush with the back side of the remainder of the water cooler cabinet, or alternately, spacially displaced outwardly therefrom to permit the remainder of the water cooler to be recessed in a back wall.

3,704,926

WATER HEATER HOUSING FOR TRAVEL TRAILERS AND METHOD OF INSTALLING SAME

Derek C. Wariner, Fremont, Calif., assignor to National Steel Construction Co., Newark, Calif.

Filed May 17, 1971, Ser. No. 143,996
Int. Cl. A47b 67/02; B60r 5/00
U.S. Cl. 312—242 9 Claims



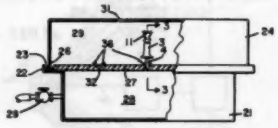
After the trailer has a wall in place for the enclosure thereof, an open-ended casing for the heater is installed in an opening in the wall, with the open end of the casing adjacent to the relatively outside face of the wall. Also, a structural frame is formed on the body of the trailer about the opening, adjacent the aforesaid outside face of the wall, and an outer wall for the enclosure is juxtaposed on the opposite side of the frame from the first mentioned wall, with an opening in the outer wall that registers with the open end of the casing. Then, an apertured cover is registered with the open end of the casing, adjacent the opening in the outer wall, and the casing and cover are secured to the frame.

3,704,927

APPARATUS FOR MAKING FLUORESCENT LAMPS

Charles L. Toomey, and Gerald D. Butler, both of c/o Sylvania Electric Products, Inc., Danvers, Mass.

Division of Ser. No. 562,736, July 5, 1966, abandoned. This application May 27, 1968, Ser. No. 739,943
Int. Cl. H01j 7/20
U.S. Cl. 316—30 3 Claims

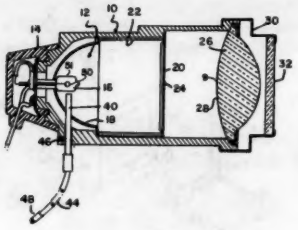


A chamber for processing fluorescent lamp cathodes has a dividing wall with openings receiving the unsealed exhaust tube of the glass stem on which the cathode is supported. Adjacent each opening are conductors connecting the cathode leads to an adjustable source of heating current. While heating the cathodes at scheduled currents, a controlled flow of inert gas, e.g. nitrogen, enters the inlet portion of the chamber on one side of the wall thence through the exhaust tube of each stem past the cathode on the stem in the outlet portion of the chamber on the other side of the wall. The controlled flow of gas allows a carbon dioxide atmosphere at the cathode during reduction of alkaline earth metal carbonate on the cathode to its oxide, while the gas flow provides an otherwise inert environment.

3,704,928
DENTAL LIGHT WITH DICHROIC AND INFRARED FILTERS

Peter M. Coombs, Newton, N.H.; Ernest Davey, Lynn, and Conrad Edward Kowalski, Marblehead, both of Mass., assignors to Sylvania Electric Products, Inc.

Filed Nov. 9, 1970, Ser. No. 87,792
Int. Cl. G02b 5/22
U.S. Cl. 350—1 **1 Claim**

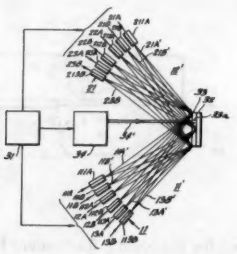


A fixture for dental illumination, in which an elliptical reflector and light source is used with a light gate and projection lens, these being set in an enclosing canister with the light emerging through the lens, an infrared filter in the path of the light rays to absorb unwanted heat radiation, and a dichroic filter on the surface of the lens facing the reflector to correct the light-rendering index of the emitted light. Without any filter, neither infrared nor visible, the color rendering index of the light from the device is 97.5. When the infrared filter is added, this drops to 88.0, but the addition of the dichroic visible-light filter brings this back to 97.5, which is very good.

3,704,929
LARGE CAPACITY ASSOCIATIVE MEMORY EMPLOYING HOLOGRAPHY

Mitsuhito Sakaguchi, and Nobuo Nishida, both of Tokyo-to, Japan, assignors to Nippon Electric Company, Limited, Minato-ku, Japan

Filed Nov. 12, 1970, Ser. No. 88,745
Claims priority, application Japan, Dec. 6, 1969, 44/97/996. The portion of the term of this patent subsequent to March 30, 1988, has been disclaimed.
Int. Cl. G02b 27/00
U.S. Cl. 350—3.5 **9 Claims**



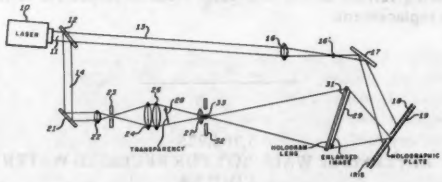
A large capacity associative memory of the holographic type. Coded information uniquely identifying first data and in the form of spatially modulated coherent light rays, forms an interference pattern with coded information representing second data in the form of spatially modulated coherent light rays and which are related to the first data in a predetermined fashion, as well as with a coherent light beam of relatively narrow cross-section whereby said interference pattern is recorded upon a record plate of photosensitive material in a direction transverse to the surface of the plate. Only that portion of the plate which is exposed to the small cross-section light beam develops the interference pattern, as a result of the use of a saturable die plate positioned in front of the photographic plate to prevent passage of light therethrough except at that area (or those areas) in which the coherent light exceeds a predetermined threshold value. The plate is filled with inter-related first and second data in a point-by-point basis by sequentially scanning the plate with the narrow cross-section beam.

Retrieval of data is brought about by directing spatially modulated coherent light beams, representative of the binary information upon the record plate. A first detector array identifies those positions on the record plate which fail to generate primary diffraction images. Using this information, the narrow cross-section coherent light beam is deflected to each of the positions storing a retrieved pattern. Second and third detector arrays detect light spots generated by Braggs reflection which spots respectively represent the interrogation information and the retrieval information related thereto.

3,704,930
MICRO-HOLOGRAPHIC RECORDING AND READING APPARATUS

Donald H. McMahon, Carlisle, Mass., assignor to Sperry Rand Corporation

Filed March 31, 1971, Ser. No. 129,737
Int. Cl. G02b 27/22
U.S. Cl. 350—3.5 **10 Claims**

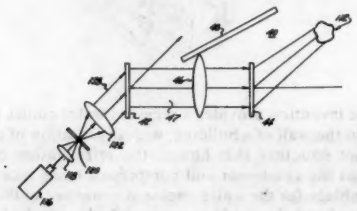


Micro-holographic Fourier transform recorder apparatus arranged and constructed so as to provide, with suitable reader apparatus reproduced images of a sufficient size for direct viewing and compensated for aberration and laser speckle. The recorder includes means for providing an enlarged image of the transparency to be recorded prior to making the hologram whereby an enlarged image is produced on reconstruction. The appearance of laser speckle is eliminated in the reader apparatus by means of an appropriate vibratory motion applied to the diffusing screen on which the image is presented.

3,704,931
METHOD AND APPARATUS FOR PROVIDING AN ENHANCED IMAGE OF AN OBJECT

Rolf K. Mueller, Brighton, Mich., assignor to The Bendix Corporation

Filed Aug. 30, 1971, Ser. No. 175,907
Int. Cl. G02b 27/22
U.S. Cl. 350—3.5 **15 Claims**



An enhanced image of an object is formed using a multicomponent signal having a weak signal component

representing the object that is mixed with a strong signal component representing a localized source that tends to mask the weak signal component by multiplying the multicomponent signal by the intensity distribution of the high-frequency portion of that signal. This multiplication provides a multicomponent output signal having one component separate from all other components that provides a clear image of the object. Embodiment for providing images from multicomponent optic signals and from lower frequency multicomponent signals such as acoustic signals are described herein.

3,704,932

STEREOMICROSCOPE

Dieter Schick, Giessen, Germany, assignor to Ernst Leitz GmbH

Filed Nov. 22, 1971, Ser. No. 200,676

Claims priority, application Germany, Nov. 28, 1970, P 20 58 675.8

Int. Cl. G02b *21/22, 23/04*

U.S. Cl. 350—35 **3 Claims**

In a stereomicroscope with two parallel image-forming bundles of light beams and oblique image viewing a Schmidt prism is so arranged that either bundle of light beams impinges completely on only one respective roof surface of the Schmidt prism. Two sets of reflectors in Rhombus arrangement are provided behind the Schmidt prism in the direction of light travel so as to deflect a respective one of the beams emerging from the prism to the eyepieces. The arrangement allows a distortion-free adjustment of the eye distance; and in the manufacture of the component parts of the system less accuracy may be observed compared with prior art systems.

3,704,933

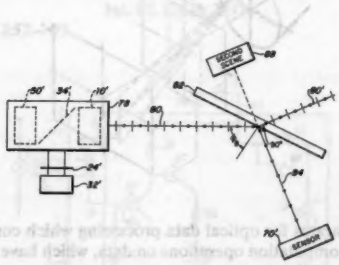
SEE-THROUGH READOUT OF ELECTRO-OPTIC MEDIUM

William R. Buchan, Lincoln, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed May 4, 1971, Ser. No. 140,088

Int. Cl. G02f *1/26*

U.S. Cl. 350—150 **12 Claims**



An apparatus and a method for reading out information present in the form of variations in electric field intensity including applying an electric field whose intensity varies in a predetermined pattern to a birefringent electro-optic medium whose birefringence varies as a function of the intensity of an applied electric field; providing to the medium polarized radiation whose polarization is modulated by the birefringence of the medium in accordance with the intensity of an applied electric field; and submitting that radiation to a transparent element at Brewster's angle to detect the modulation of the radiation representative of that predetermined pattern.

3,704,934

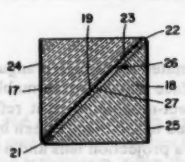
LASER POLARIZING BEAM SPLITTER

Samuel J. Holmes, Santa Monica, and Frank Joseph Woodberry, Playa Del Ray, both of Calif., assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 16, 1971, Ser. No. 172,130

Int. Cl. G02b *27/28*

U.S. Cl. 350—152 **4 Claims**



The beam splitter comprises first and second prisms having diagonal surfaces placed together in juxtaposed relationship with means on the opposing edge portions of the surfaces holding the surfaces in spaced relationship to define a thin chamber therebetween. A fluorinated hydro-carbon liquid fills this chamber and one diagonal surface is provided with a multi-layered di-electric coating. High reflectance is provided for the S component of a laser beam and high transmittance for the P component for both ruby and neodymium laser wave lengths of 0.694 and 1.06 microns respectively. The use of the liquid interface avoids the necessity of cement or glue to hold the prisms together so that the beam splitter may be used with high power laser beams without the risk of deterioration.

3,704,935

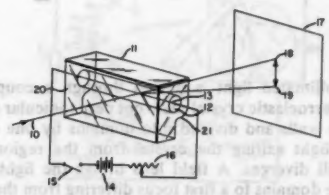
LIGHT BEAM DEFLECTION METHOD AND APPARATUS

Karl W. Boer, Buck Toe Hills, Kennett Square, Pa.

Filed Nov. 13, 1970, Ser. No. 89,302

Int. Cl. G02f *1/32*

U.S. Cl. 350—160 R **34 Claims**



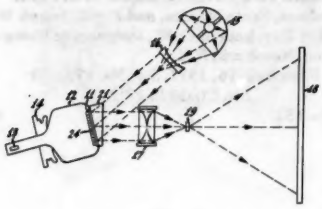
Method and apparatus for variably deflecting a beam of light in a predetermined manner by creating and controllably varying an index of refraction gradient within the medium through which the light beam passes.

3,704,936

ACHROMATIC DEPTH-OF-FIELD CORRECTION FOR OFF-AXIS OPTICAL SYSTEM

Walter Joseph Gorkiewicz, New York, N.Y., and John A. van Raalte, Princeton, N.J., assignors to RCA Corporation

Filed March 9, 1970, Ser. No. 17,671
Int. Cl. G02f 1/28; G02b 13/10; G03b 21/00
U.S. Cl. 350—161 9 Claims



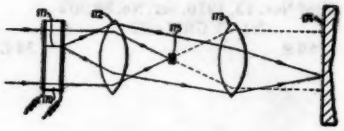
Unmodulated, collimated white light is angularly directed to a target reflecting surface which is deformable to represent a subject, and the subject-modulated light reflected from the target surface is directed to a viewing screen by a schlieren optical system including a projection lens and a stop at the focal point of the lens. A prism is located adjacent the real subject-bearing target surface for rendering the apparent target surface parallel, and the light reflected therefrom orthogonal, to the principal plane of the lens and the screen; and for so reducing any color dispersion of the reflected light as to obtain adequate resolution of the image of the subject projected onto the screen.

3,704,937

OPTICAL LINE SCANNER USING A COUPLED FERROELASTIC-FERROELECTRIC CRYSTAL PLATE

Robert K. Waring, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 26, 1971, Ser. No. 119,238
Int. Cl. G02b 27/38; G02f 1/28
U.S. Cl. 350—162 SF 36 Claims



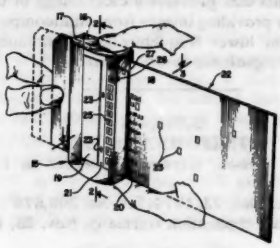
When collimated light is passed through a coupled ferroelectric-ferroelastic crystal plate cut perpendicular to possible domain walls and divided into domains by one or more walls, the light exiting the crystal from the region of the domain wall diverges. A field lens brings the light passing through the domains to a first focus differing from the second focus of light passing through the domain wall region. By use of a suitable stop at the first focus, an image of an optical line (light on a dark field or dark on a light field) can be obtained at the second focus. The domain walls can be moved in response to electrical or mechanical stress to provide an optical line scanner. The differing polarization properties of the region of the domain wall and the adjacent domains can also be used to supplement the spatial filtering.

3,704,938

PUNCH CARD VIEWER

Hyman Fanselow, 978 E. 105th Street, Brooklyn, N.Y.

Filed Oct. 1, 1970, Ser. No. 77,173
Int. Cl. G02b 27/02
U.S. Cl. 350—241 5 Claims



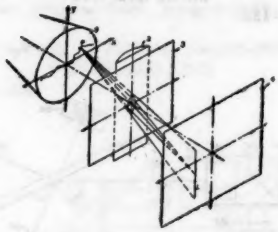
A Punch Card Viewer is provided in the form of a magnifying glass having a flat rear face and a rounded magnifying top face and a vertically extending leading slot adapted to block out all data and holes when the viewer is maintained flush with the bottom edge of the punch card. The viewer can be guided upon the lower edge of the punch card by the thumb while grasping the viewer and extending it over the card or by a ledge extending rearwardly from the rear face of the viewer. The viewer has a pocket clip so as to keep the viewer in the pocket of the card reader. Horizontal line designations are provided upon the viewer adjacent to the vertically extending reading slot. There is also provided a card viewer which may extend over the full face of the punch card and which has rearwardly extending ledges at the upper and lower edges of the viewer to keep the card confined against vertical displacement and also has lines to box in the horizontal rows of holes and data upon the card. This full viewer has a vertically extending reading slot on an extension thereof at one end which can be aligned with any vertical row of holes or data upon the card. The viewer can also be provided with space for the displaying of essential data, which aids the reader of the card in making his deductions therefrom.

3,704,939

OPTICAL SIGNAL AVERAGING APPARATUS

Ejler Baastrup Neergaard, Lystrup, Denmark, assignor to Niels Erik Guldbaek Kaiser, Vanlose, Denmark

Filed June 10, 1970, Ser. No. 45,178
Claims priority, application Denmark, June 10, 1969, 3124/69
Int. Cl. G02b 27/00
U.S. Cl. 350—321 7 Claims



An apparatus for optical data processing which conducts a series of computation operations on data, which have an optical representation.

The apparatus provides, by means of optical components, a photographic registration of the mean value or median value of several processes or functions, (signal averaging).

The treatment is based on the use of means for controlled spreading of the luminance in the direction of the amplitude axis, corresponding to the individual amplitude values. The use of controlled unidirectional spreading of luminance is known e.g. in photographic processing of light emission spectra, in the Eindhoven string-galvanometer and sound reproduction cameras.

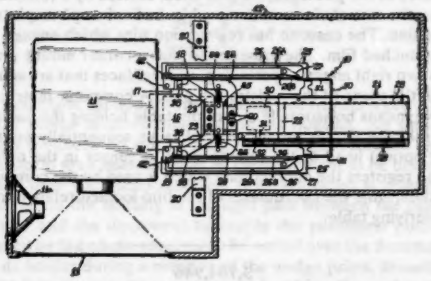
ERRATUM

For Class 352—129 see:
Patent No. 3,705,105

3,704,940
UNITARY PROJECTOR PLAYER

Ray C. Anderson, 3700 15th Street, Rock Island, Ill.

Filed Aug. 12, 1971, Ser. No. 171,130
Int. Cl. G03b 23/02
U.S. Cl. 352—72 8 Claims

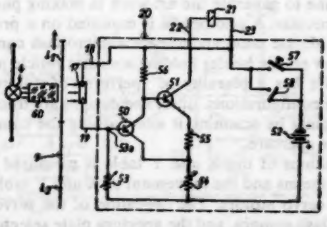


A self-contained unitary projector-player unit to provide a complete entertainment center within itself including a housing, a projector in the housing, a rear projector screen formed in the sidewall of the housing and including a film cartridge change mechanism for handling a plurality of film cartridges and sequentially inserting a cartridge from a stack of cartridges into the projector-player, withdrawing the cartridge after play has been completed, stacking the used cartridge in a receiving receptacle, and inserting the next cartridge in sequence into the projector player.

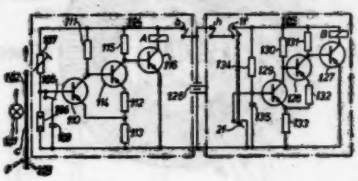
3,704,941
MOTION PICTURE PROJECTOR

Alfred Winkler, Munich; Johann Zanner, Unterhaching; Bernhard V. Fischern, and Klaus Fuchsle, both of Munich, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 17, 1970, Ser. No. 99,179
Claims priority, application Germany, Dec. 20, 1969, P 19 64 011.0
Int. Cl. G03b 21/50
U.S. Cl. 352—92 29 Claims



A motion picture projector for use with film wherein the light transmissivity of the leading and trailing film portions is less than the light transmissivity of the median or main film portion. The film is scanned by one or more photoelectric receivers which produce signals in response to detection of the main film portion while the film is moved forwardly whereby such signals cause the film transporting mechanism to reduce the speed of forward transport of the film to normal speed. The receiver or receivers can also produce signals in response to detection of the trailing film portion whereby such signals initiate automatic reversal in the direction of film transport so that the film is collected by the supply reel. The signals which are produced in response to detection of the main film portion

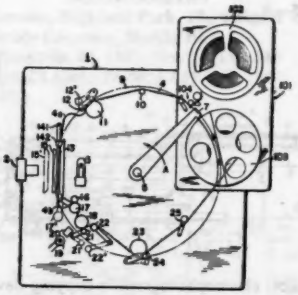


can also cause the claw pull-down to begin with stepwise transport of film past the gate, a shutter to permit entry of light into the projection lens system, a film threading mechanism to move away from the supply reel, a pressure plate to move against the film, and/or a deflecting mechanism for the tip of the leading film portion to assume an inoperative position. Signals which are produced in response to detection of the trailing portion of the film can further cause a shutter to move between the lens system and the light source, to automatically arrest the rewinding drive with a desired delay, and/or to open the circuit of the light source.

3,704,942
AUTOMATIC FILM-LOADING PROJECTOR

Satoshi Tsunoda, Tokyo, Japan, assignor to Hokushin Electric Works, Ltd., Tokyo, Japan

Filed March 5, 1971, Ser. No. 121,393
Int. Cl. G03b 1/58
U.S. Cl. 352—158 7 Claims



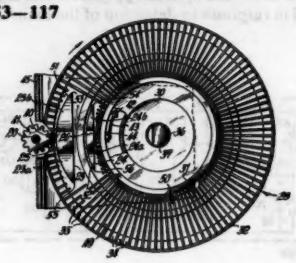
An automatic film-loading projector including means for automatically effecting all loading operations, including leading a cartridge selected from a plurality of stored film cartridges into a predetermined position in the projector, and actuating the projector to automatically project a picture on the film in the cartridge.

3,704,943

SLIDE PROJECTOR FOR USE WITH STRAIGHT AND CIRCULAR SLIDE TRAYS

Helmut Rube, Endersbach, Germany, assignor to Robert Bosch Elektronik und Photokino GmbH, Stuttgart-Unterturkheun, Germany

Filed July 19, 1968, Ser. No. 746,123
Claims priority, application Germany, Aug. 18, 1967, P 15 72 584.5
Int. Cl. G03b 23/06
U.S. Cl. 353—117 9 Claims



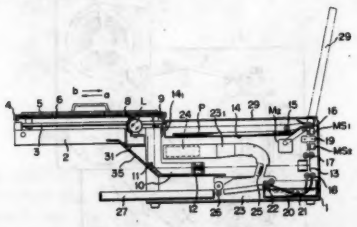
A slide projector whose housing is formed with a tunnel extending in parallelism with the optical axis of the projection lens for reception of stepwise advancing straight slide trays, and with a pocket which communicates with a median portion of the tunnel and permits insertion of a circular slide tray upon removal of a straight tray. The bottom wall of the tunnel is provided with two segment-shaped cams which can enter parallel channels provided in the undersides of straight trays or concentric annular channels in the undersides of circular trays to lift slides from a lower level to a higher level. The thus raised slides are located at a level above a straight or cylindrical panel of a straight or circular tray over which the slide changer must transport the slides toward viewing position. The circular trays are indexible about a vertical axis.

3,704,944

COPYING DEVICE HAVING A SLIT-EXPOSURE SYSTEM

Shigehiro Komori, Kawasaki; Akira Kurahashi, and Jiro Sato, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha Co. Ltd.

Continuation of Ser. No. 688,213, Dec. 5, 1967, abandoned.
This application March 30, 1970, Ser. No. 22,115
Claims priority, application Japan, Dec. 10, 1966, 41/112995; May 24, 1967, 42/33030; Aug. 10, 1967, 42/51514
Int. Cl. G03g 15/00
U.S. Cl. 355—8 10 Claims



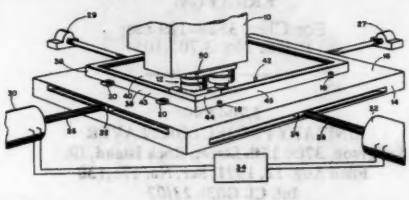
A compact, electrophotographic copying device in which the copy stand is horizontally moveable over the top of the copier housing. Copy on the copy stand is illuminated through a slit exposure system at one end of the housing, and the reflected image passes through an L-shaped optical system to the exposure portion at the other end of the housing. Photosensitive copy paper moves downwardly across this portion synchronously with movement of the copy stand. The copy paper is fed from a feed position between the copy stand and the optical system.

3,704,945

PHOTOPLOTTER ACCURATE FILM LOCATING MECHANISM

Richard E. Denis, Beverly; Joseph J. Sliwkowski, Framingham, and Gilbert Fryklund, Winchester, all of Mass., assignors to Computervision Corporation, Burlington, Mass.

Filed May 5, 1971, Ser. No. 140,349
Int. Cl. G03b 27/52
U.S. Cl. 355—40 9 Claims



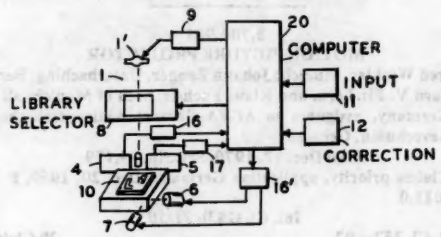
A mechanism for precisely determining the location coordinates of the photographic film sheet carried by a removable cassette mounted on the movable bed of a photoplotting machine. The cassette has registration pins which engage the prepunched film. The cassette also has a corner mount which has two right angled, upstanding, vertical faces that are square with the plane of the registration pins. A computer interfaced drive means horizontally moves the table holding the cassette so that the corner mount vertical faces sequentially contact the optical head of the photoplotter. A sensor in the optical head registers the contact data which is used by the computer to determine the coordinates of the film located relative to its underlying table.

3,704,946

MICROCIRCUIT ART GENERATING MEANS

Andre R. Brault, Armand Court, Head of the Harbor, St. James, N.Y.; Anwar K. Chitayat, 8 Gilbert Lane, Plainview, N.Y., and Ronald C. M. Beeh, Engineers Hill, Brentwood, L.I., N.Y.

Filed Feb. 20, 1969, Ser. No. 812,943
Int. Cl. G03b 27/46, 27/50
U.S. Cl. 355—46 10 Claims



A machine to generate the art work in making photomasks for microcircuits. A photoplate is mounted on a precision X and Y coordinate table underneath a microflash camera having a master reticle holder holding a master reticle plate. The master plate has a plurality of apertures of different sizes, shapes and configurations. Lines and designs are traced on the receiving plate by scanning it and flashing the camera lamp through the aperture.

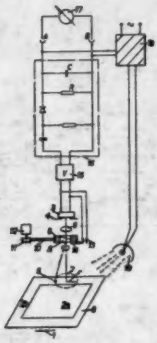
The positions of the X and Y table is measured by interferometer means and the movement of X and Y tables is controlled by servo motors. The operation of the servo motors, the microflash camera, and the aperture plate selector may be automatically controlled by computer program input means.

Master plates may be made on this machine.

3,704,947
MICRO-FILM CAMERA

Hubertus Reimann, Dresden, Germany, assignor to VEB Pentacon Dresden Kamera-und Kinowierke, Dresden, Germany

Filed Jan. 4, 1971, Ser. No. 103,672
Int. Cl. G03b 27/78
U.S. Cl. 355—68 4 Claims

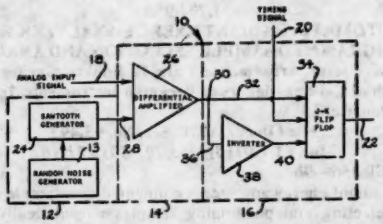


A microfilm camera for reproducing documents is provided with a photo receiver mounted on its housing. An optical system mounted on the housing directs light reflected by a punctiform area near the edge of the document to be photographed onto the photo receiver. A wedge prism is rotatably mounted on the housing in the light path between the photo receiver and the document to enable the puntiform portion scanned by the photo-receiver to be varied over the document and its border during a rotation of the wedge prism. Mounted on the housing is a drive means which rotates the wedge at a constant speed. Provision is made for reducing the output from the photo-electric device to a zero illumination level once during each revolution of the wedge prism. Mounted on the housing is a measuring circuit which includes a rectifier connected with an output of the photo-receiver and a storage device having a time constant long compared with the time for one rotation of the wedge prism and effective to store a voltage indicative of the brightness of the document. A control device is influenced by the output of the storage device provides a controlled voltage which influences the illumination of the lamp in dependence on the brightness of the document border.

3,704,948
METHOD AND APPARATUS FOR TRANSMITTING INFORMATION

Iben Browning, Sunnyvale, Calif., assignor to Longshots, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 523,114, Jan. 26, 1966, abandoned. This application Oct. 7, 1966, Ser. No. 585,098
Int. Cl. G03b 27/72
U.S. Cl. 355—80 9 Claims

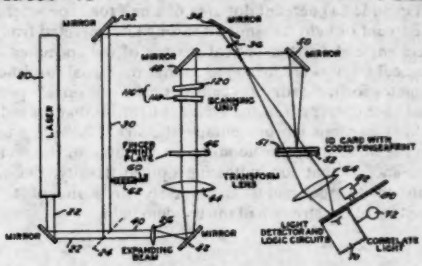


An analog-to-digital conversion method and apparatus is disclosed wherein a random noise signal is mixed with an analog signal to produce an output signal of binary pulses, the probability of occurrence of which pulses is proportional to the waveform of the analog signal. More generally, a random information matrix is modulated with an analog information matrix such as a photograph to reduce contrast and produce a continuous "gray scale" with greater definition in the output.

3,704,949
METHOD AND APPARATUS FOR PERSONAL IDENTIFICATION

Carlton E. Thomas, Van Nuys, Calif., and Gary D. Cochran, Ann Arbor, Mich., assignors to RMS Industries, Inc., Ann Arbor, Mich.

Filed June 22, 1970, Ser. No. 48,373
Int. Cl. G06k 9/08
U.S. Cl. 356—71 9 Claims

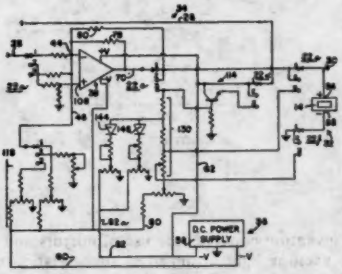


A method and apparatus for creating an encoded fingerprint card which consists of a hologram of a fingerprint created by a main illuminating beam and a reference beam on a sensitive photographic plate and the use of the encoded fingerprint in a matched filter correlator in real time wherein the fingerprint of a subject can be introduced into the system and correlated with the encoded information to verify identity between the original encoded information and the person claiming identity therewith. The system includes a means for creating relative motion between the fingerprint transform image and the transform plane filter in the form of a hologram to insure proper alignment at some place between said image and said filter to produce light output correlation peaks even when the image or the filter or both are mechanically misaligned.

3,704,950
ELECTRICAL SYSTEM FOR USE IN OPTICAL DENSITOMETRY

Robert Rosencranz, Highland Park, Ill., assignor to Sargent-Welch Scientific Company, Skokie, Ill.

Filed Feb. 22, 1971, Ser. No. 117,541
Int. Cl. G01n 21/00; G01j 3/42, 1/44
U.S. Cl. 356—73 8 Claims



An electrical system for use in optical densitometry. The system includes a plurality of separately operable electrical

circuits contained in a single unit, and each circuit is adapted to produce response characteristics in a single voltmeter or other associated readable instrument which characterize one selected property or characteristic of the specimen being analyzed. In use, with the electrical system operatively associated with a photometer and a voltmeter or the like, the user, by merely manipulating a single control, may select a circuit which will produce a readable signal indicative of the characteristic he wishes to measure, and such indication or measurement may then be read directly from the voltmeter, for example, while moving the switch to other positions will select other circuits and cause the voltmeter reading to indicate measurements of other characteristics of the same sample. All these operations may be carried out without the necessity of changing the sample, the photometer, the connections thereto, or the character of the voltmeter or other instrument providing the reading. The characteristics typically able to be read include (a) percent dot area of a half tone specimen, (b) the percent of light transmitted through or reflected from the specimen, and (c) the optical density of the specimen. The electrical circuits are arranged so that the signal furnished to the meter for indicating percent dot area is inversely proportional to the strength of the incident light, so that for indicating light transmission percentage, the signal furnished to the meter is directly proportional to the strength of the incident light, and so that for indicating optical density, the signal furnished to the meter is inversely proportional to the logarithm of the strength of the incident light.

3,704,951

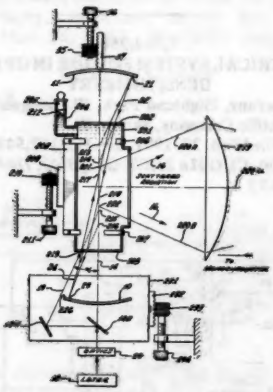
MULTIPASS LIGHT CELL FOR INCREASING THE INTENSITY LEVEL OF RAMAN LIGHT EMISSION FROM A SAMPLE

Vernon L. Chupp, San Dimas, Calif., assignor to Cary Instruments, Monrovia, Calif.

Continuation of Ser. No. 832,102, June 11, 1969, abandoned. This application , Ser. No. 130,478

Int. Cl. G01j 3/44

U.S. Cl. 356—75 **33 Claims**



The invention concerns the use of mirrors and a source of sample exciting light arranged in such relation to a sample zone that source light is caused to pass many times through a sample in that zone for increasing substantially the intensity level of Raman light emission from the sample.

3,704,952

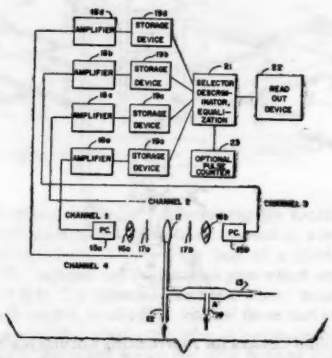
FLUID MEDIUM SOURCE TRACER METHOD

Douglas Bird, Schenectady, N.Y., assignor to Environment/One Corporation, Latham, N.Y.

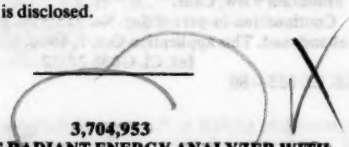
Filed Dec. 29, 1969, Ser. No. 888,747

Int. Cl. C08f 27/04; G01j 3/30

U.S. Cl. 356—87 **7 Claims**



A fluid medium source tracer method and materials is described which employs specially prepared particulate materials containing bound identifier elements in known fixed ratios and dispersed in a fluid medium to be labeled. Test samples of a fluid medium (either liquid or gas) are burned in a flame emission spectrometer which measures simultaneously one principal spectral emission band from each of the bound elements in any single particle that passes through the flame of the spectrometer. The method is applicable to studies in water, air contamination, or other liquids and in studies of air flow. It allows a number of different unique, characteristic "finger prints" to be dispersed into fluid mediums to be identified at some subsequent point in space and/or time as a suspected source of contamination by use of the specially prepared particulate material containing bound elements in known fixed ratios as the "finger prints." In liquids, the additive particulate materials can be used at average levels as dilute as 1 part per billion by weight (and possibly less), and yet the technique is capable of deriving spectral emission signals generated in the flame emission spectrometer by the labeling particulate materials which are at least one or two orders of magnitude greater than emission signals produced by background noise or other naturally occurring interference. The labeling particulate materials and the method of their preparation also is disclosed.



3,704,953

AUTOMATIC RADIANT ENERGY ANALYZER WITH PROGRAMMED SAMPLE SELECTION AND ANALYSIS

Dale K. Carter, Arcadia, and Carel H. Ronkes, Garden Grove, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

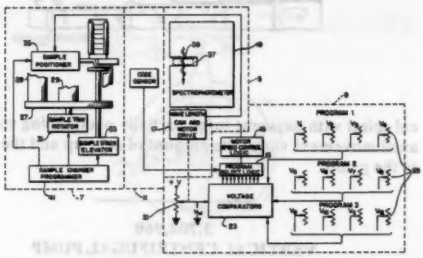
Filed Dec. 7, 1970, Ser. No. 95,493

Int. Cl. G01j 3/42, 3/12; G01n 21/16

U.S. Cl. 356—96 **8 Claims**

A radiant energy analyzer is connected to a sample changer for selecting and positioning samples automatically in the analyzer for analysis according to sample selection programs. A wavelength programmer is attached to the analyzer to select a sequence of wavelength scanning intervals by which the

samples are analyzed. A code sensing device is connected to the wavelength programmer for sensing an arrangement of



coding elements associated with each sample location to select a wavelength scanning program.

3,704,954

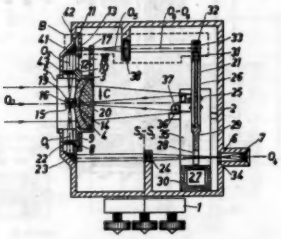
LEVELING INSTRUMENT

Gerhard Huther; Rolf Roder, and Ulrich Schmidt, all of Jena, Germany, assignors to Jenoptik Jena G.m.b.H., Jena, Gera, Germany

Filed Dec. 7, 1970, Ser. No. 93,279

Int. Cl. G01c *1/06, 9/02, 9/12*

U.S. Cl. 356—143 **3 Claims**



A leveling instrument comprises a sighting telescope and an optical micrometer. The anallactic point, or telescope point of tilt, decisive for the height measurement is exterior to the vertical axis of rotation of the telescope. By means of the micrometer, the collimating mark and the leveling staff are so displaced relatively to one another in the telescope field of vision that the mark and a full interval of the leveling staff coincide. The relative displacement is indicated by an index on a scale and read through an optical reading system. The reading system includes an optical compensator for balancing the effect which the distance between the anallactic point and the vertical axis of rotation of the telescope produces on the height measurement.

3,704,955

RADIATION ENTRAPPING, MULTI-REFLECTION RAMAN SAMPLE CELL EMPLOYING A SINGLE CONCAVE MIRROR

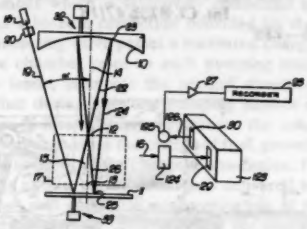
Edouard Horace Siegler, Jr., Claremont, Calif., assignor to Cary Instruments, Monrovia, Calif.

Filed Feb. 19, 1970, Ser. No. 12,628

Int. Cl. G01n *21/24*

U.S. Cl. 356—244 **15 Claims**

Apparatus for passing light repeatedly through a sample in a sample space comprises two longitudinally separated reflectors one of which is concave and the other of which is planar,



the reflectors located to repeatedly reflect a light beam therebetween for passage repeatedly through the sample space.

ERRATUM

For Class 408—26 see:
Patent No. 3,704,517

3,704,956

DEVICE FOR POSITIONING WORKPIECES IN A PRE-ESTABLISHED SEQUENCE OF MACHINING POSITIONS

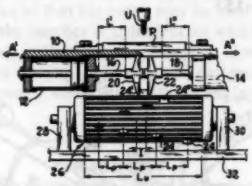
Emilio Poss, Verbania, Italy, assignor to FIMI S.p.A., Milan, Italy

Filed Sept. 21, 1970, Ser. No. 73,815

Claims priority, application Italy, April 11, 1970, 23176 A/70

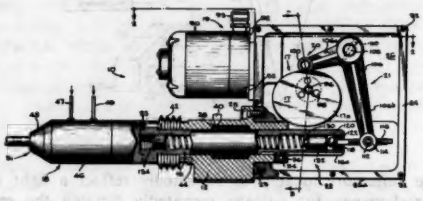
Int. Cl. B23q *7/02*

U.S. Cl. 408—91 **13 Claims**



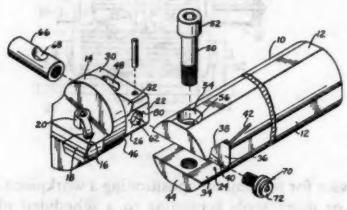
A device for sequentially positioning a workpiece in respect of one or more tools according to a scheduled plurality of positions, said device comprising a movable assembly and a stationary assembly respectively connected to a workpiece and to the tool(s), or vice versa. The movable assembly comprises two oppositely directed and powered pushers movably operated in opposite directions along a straightpath, between a minimum spacing position and a maximum spacing position thereof, said pushers being operated by cylinder-piston assemblies rigidly connected to a worktable or the like slidingly movable in a direction parallel to said pusher path. The stationary assembly comprises a programming means adapted to successively bring a plurality of projections, having a length equal to said pusher minimum spacing, along said pusher path and between said pushers in their maximum spacing position, in order to carry-out a required worktable positioning step during a subsequent motion of said pushers to their minimum spacing position. The device comprises also a system of control, interlocking and consent means to ensure an accomplishment of said motions according to a pre-established operational sequence and without any inconsistent condition.

3,704,957
CAM OPERATED DRILL UNIT
Robert J. Petroff, 1703 S. Main St., Lombard, Ill.
Filed Aug. 17, 1970, Ser. No. 64,164
Int. Cl. B23b *47/18*
U.S. Cl. 408—129 **6 Claims**



A drill unit adapted for controlled axial advancement of a drill from a retracted position toward a workpiece includes a quill axially movable within a housing. A cam follower operated by a rotatable cam provides reciprocating movement. Linkage between the cam follower and the drill allows the quill to accurately axially advance toward the workpiece and retract. Motor means for rotating the drill at high speed is mounted at the outer end of the drill and is axially movable therewith, the drill being operatively associated with the motor means. Biasing means between the linkage and the quill establish a preselected maximum axial force applicable to the quill by the linkage.

3,704,958
ADJUSTABLE BORING BAR
Robert S. Gulibon, Mt. Pleasant, and James W. Heaton, Greensburg, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.
Filed April 1, 1971, Ser. No. 130,190
Int. Cl. B23b *29/08*
U.S. Cl. 408—153 **3 Claims**

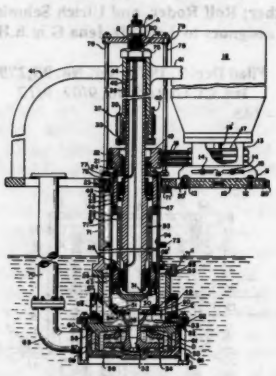


The specification discloses a boring bar having a shank with a head mounted on one end thereof by means of a dovetail tongue and groove arrangement. A clamp screw extends transversely through the groove and also through the tongue for clamping the shank and head together. A positive adjustment is provided for adjusting the head in both directions along the direction of the length of the groove.

3,704,959
GUARDS
Ronald John, London, England, assignor to Molins Machine Company Limited, London, England
Filed Oct. 13, 1970, Ser. No. 80,337
Int. Cl. B23b *47/00*; **B23q** *11/08*
U.S. Cl. 408—241 G **5 Claims**

A retractable guard, more particularly for an axially movable cutting tool spindle of a machine tool to prevent ingress of swarf, and consisting of a stainless steel strip wound as a helical spiral with adjacent turns partially overlapping so that the axial movement varies the amount of overlap and the conicity of the guard.

3,704,960
VERTICAL CENTRIFUGAL PUMP
Irvin Frank Zagar, Lakewood, Colo., assignor to A. R. Wilfley and Sons, Inc., Denver, Colo.
Filed Feb. 26, 1971, Ser. No. 119,233
Int. Cl. F04d *1/00, 29/40, 13/02*
U.S. Cl. 415—131 **30 Claims**

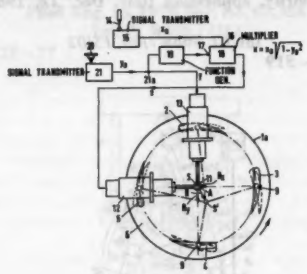


A vertical centrifugal pump having a stationary shaft and a rotating shaft and means associated with said shafts for adjusting the clearance between the pump impeller and pump casing. Means are also provided for adjusting the clearance between the expeller and a die ring which is secured in a position to form a labyrinth passage for protecting the bearing means for the shaft. The stationary and rotating shafts are coaxially arranged in a manner to provide an effective seal for the shaft bearings.

3,704,961
CONTROL SYSTEM FOR A CYCLOID PROPELLER FOR SHIPS
Kurt Fork, Frauenaurach, and Werner Fork, Bremen-Arsten, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Munich, Germany
Filed June 15, 1971, Ser. No. 153,210
Claims priority, application Germany, June 18, 1970, P 20 29 995.0
Int. Cl. B63h *1/10*
U.S. Cl. 416—111 **4 Claims**

A servo motor controlled by a speed control lever and a servo motor controlled by a steering wheel adjust the position of the control point of the pivoted blades of a cycloid propeller in two directions. The control connection between the lever and the servo motor controlled thereby includes a

first signal transmitter and the control connection between the wheel and the servo motor controlled thereby includes a second signal transmitter. The signal provided by the first



signal transmitter is controlled as a function of a function generator supplied with the signal provided by the second transmitter.

3,704,962

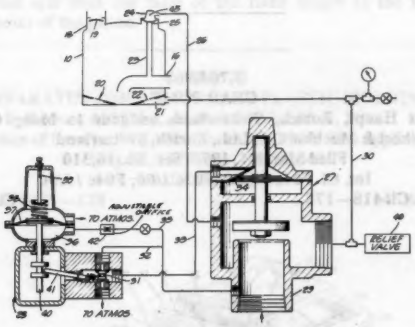
FLUIDIZED MATERIAL PUMP

Wyatt Weeks, Houston, Tex., assignor to N. L. Industries, Inc., New York, N.Y.

Filed Aug. 30, 1971, Ser. No. 176,080

Int. Cl. F04f *1/06, 3/00*

U.S. Cl. 417—143 **2 Claims**



A pump for pumping fluidized pulverulent material such as clay or barite from a point of supply to a point of discharge, the pump undergoing a cycle comprising a filling cycle and a discharge cycle, the cycling being self-automated, being actuated by pneumatic controls and control valves solely by the air used for pressurizing the entire device. The changeover from the filling portion of the cycle to the discharge portion of the cycle and thence back to the filling portion of the cycle when the discharge portion has been completed, and so on repeatedly, is self-regulated by the device itself, so that no other source of power such as electricity is needed. The rate at which the pump cycles may be regulated by the operator, this regulation involving again a strictly pneumatic control.

3,704,963

FUEL PUMP

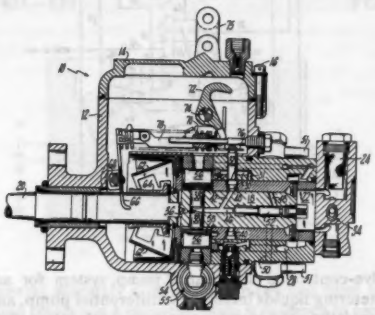
Leonard N. Baxter, Windsor, Conn., assignor to Stanadyne, Inc., Windsor, Conn.

Continuation-in-part of Ser. No. 805,415, March 10, 1969, abandoned. This application Feb. 3, 1971, Ser. No. 112,370

Int. Cl. F04b *49/00, 13/02*

U.S. Cl. 417—274 **14 Claims**

A fuel pump including a charge pump for delivering discrete pulses of high pressure fuel sequentially to the several cylinders of an engine has an automatic system, effective at low loads, to improve combustion efficiency and decrease air pollution. A reciprocable shuttle piston is disposed between the high pressure generating chamber of the charge pump and a second chamber which is selectively connected to a supply conduit past a by-pass restriction provided by the metering valve. The metering valve passes a measured charge of fuel to the pressure chamber prior to each pumping stroke, and at low engine loads, connects the second chamber with the supply conduit during alternate pumping strokes so that the shuttle piston is free to move to increase the volume of the pressure chamber to store the charge of fuel, prevent pressure build-up and delivery of the charge to the engine. Prior to the next pumping stroke, another charge is delivered to the pressure chamber, and continued communication of the second chamber with the supply conduit moves the shuttle piston to



reduce the volume of the pressure chamber an amount equal to the stored charge so that a double charge of fuel is pressurized and delivered to the engine. As engine load increases, and the metering valve opens to increase the measured charge to the pressure chamber, the by-pass restriction becomes smaller and the charges of fuel delivered during successive pumping strokes become equal when the by-pass restriction is closed.

In a variant, the second chamber for the shuttle is selectively connected to a supply conduit by a passage which by-passes the metering valve so that the pump may be used for an engine having one-half the number of cylinders for which the pump is designed. A valve in the by-pass passage is closed when the pump is used for an engine having the designed number of cylinders and opened when used with an engine having one-half that number.

3,704,964

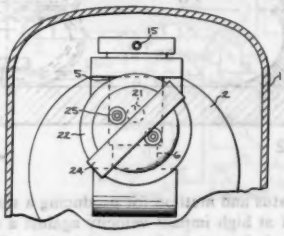
HERMETIC REFRIGERATION COMPRESSOR

Dolphus H. Phelps, Louisville, Ky., assignor to General Electric Company

Filed Aug. 9, 1971, Ser. No. 170,113

Int. Cl. F04b *21/00, 39/00, 17/00, 35/00*

U.S. Cl. 417—312 **4 Claims**



A hermetic refrigeration compressor of the low-side type is provided with an improved, low-cost low-side or intake muffler having tubular inlets particularly effective for eliminating noise frequencies of 100 cycles per second and up.

3,704,965

VALVE-CONTROLLED DIFFERENTIAL PUMP SYSTEM AND METHOD OF OPERATION

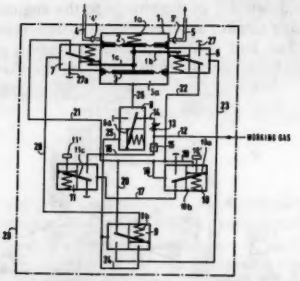
Hellmut Mentschel, 22 Hertleinstrasse, and Jahs-Joachim Henkel, 31 Friedrich-Bauer-Str., both of Erlangen, Germany

Filed June 5, 1969, Ser. No. 830,832

Claims priority, application Germany, June 7, 1968, P 17 03 545.9

Int. Cl. F04b *43/06*, *45/00*; F16k *31/44*

U.S. Cl. 417—395 5 Claims



Valve-controlled differential pump system for advancing and metering liquids including a differential pump, and means for controlling the pump comprising a plurality of mechanically actuable or mechanically and pneumatically actuable three-way valves operatively connected to the pump; and method of operating the same.

3,704,966

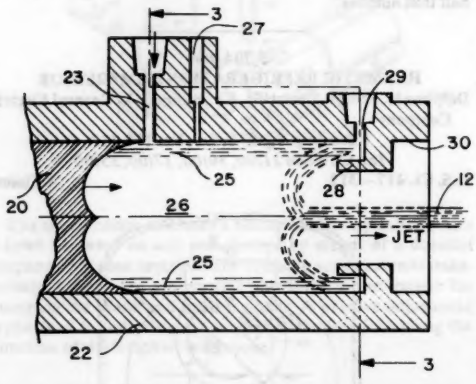
METHOD AND APPARATUS FOR ROCK EXCAVATION

Earl J. Beck, Jr., Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 13, 1971, Ser. No. 179,736

Int. Cl. F04b *7/04*; F04f *7/00*; B05b *1/08*

U.S. Cl. 417—490 8 Claims



An apparatus and method for producing a slug of water to be delivered at high impact velocity against a surface to be eroded. It includes a cylinder containing a reciprocable ram having a shaped end. Introduction of fluid tangentially into the cylinder forms a stable annulus of fluid and reciprocation of the ram rapidly expels the fluid as a jet out an end opening of the cylinder into contact with the work to be eroded.

3,704,967

RECIPROCATING PUMP FOR CONCRETE

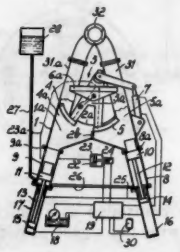
Luigi Tarulli, Viale Bovio 123, Teramo, Italy

Filed Dec. 14, 1970, Ser. No. 98,004

Claims priority, application Italy, Dec. 22, 1969, 49804 A/69

Int. Cl. F04b *7/00*, *15/02*

U.S. Cl. 417—519 5 Claims



A reciprocating pump for concrete comprising a hollow body defining a concrete collection chamber with an inlet opening, concrete delivery pipes having a delivery opening communicating with said collection chamber, and pumping cylinders to pump concrete from a part of said collection chamber to said delivery pipes, and oscillating valve means to open and close alternatingly said inlet and delivery openings.

3,704,968

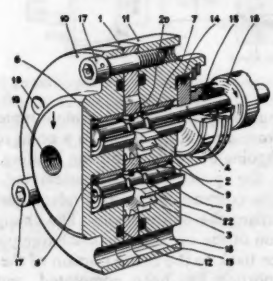
GEAR PUMP

Fritz Haupt, Zurich, Switzerland, assignor to Maag Gear Wheel & Machine Co., Ltd., Zurich, Switzerland

Filed March 4, 1970, Ser. No. 16,310

Int. Cl. F01c *17/00*; F03c *3/00*; F04c *15/00*

U.S. Cl. 418—178 4 Claims

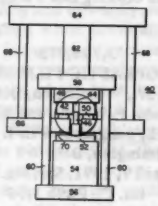


A gear pump, particularly for pumping gasoline under high pressures, comprises two intermeshed gears on substantially parallel shafts and an annular casing of substantially the same thickness as the gears surrounding the periphery of the gears and held between two casing covers arranged on respective sides of the gears which carry bores for receiving and rotatably supporting the shafts. The gears of the pump each include a bore having a raised or crowned central portion which bear on the gear mounting shaft and they are secured for rotation with the shaft by a bolt or connecting pin which extends diametrically through the shaft and engages at its projecting ends in cross-grooves defined in the gear bores. The gears are held against lateral displacement by lock washers secured to the shaft on each side of the gear.

3,704,969
APPARATUS FOR MANUFACTURING DIAMONDS

George C. Kennedy, Los Angeles, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed Aug. 13, 1970, Ser. No. 63,356
Int. Cl. B30b *11/32*
U.S. Cl. 425—77 10 Claims

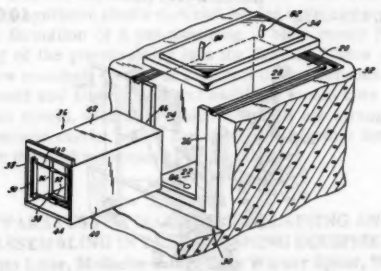


A machine is disclosed for converting graphite to diamond which includes a cylindrical reaction chamber and a reaction vessel positioned in the reaction chamber for holding the charge of graphite to be converted to diamond. A piston having a fixed length and fixed diameter is positioned in the reaction chamber with its first end contacting the reaction vessel and its second end extending out of the reaction chamber. Means are provided for applying a force to the second end of the piston, thereby generating high pressure within the reaction chamber. Further means are provided for maintaining the ratio of the unsupported length to the diameter of the piston at a value less than the ratio of the fixed length to the fixed diameter of the piston.

3,704,970
APPARATUS FOR REINFORCED PLASTIC MOLDING

John F. Reeves, 4162 N. Lake Drive, Milwaukee, Wis.

Division of Ser. No. 808,372, March 13, 1969. This application May 12, 1970, Ser. No. 36,641
Int. Cl. B29c *5/00*
U.S. Cl. 425—128 14 Claims

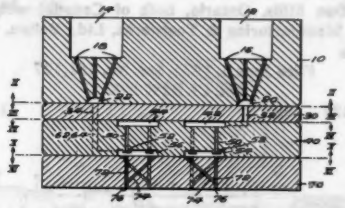


An apparatus for molding insulated reinforced plastic structures for use as refrigerated cargo containers and truck or trailer bodies. The insulated reinforced plastic structures have substantially parallel opposed sides and are molded as a unitary structure in a single molding operation. Glass fiber reinforcing materials, which include an insulating core material, are placed in the bottom of a female mold and up against the sides. A somewhat loose fitting mandrel braced vertically but which may later be expanded laterally, is lowered down in between the materials at the sides and on top of materials at the bottom. Further glass fiber reinforcing materials, including a core material, are placed on top of the mandrel. A male mold is lowered in place on top of these materials but somewhat short of full final closing. A free flowing liquid plastic resin is pumped within the space defined by the male and female molds and the mandrel. The free flowing liquid plastic resin impregnates the glass fiber reinforcing and wets the surfaces of the core material. The male mold is closed fully downward and the mandrel expanded fully laterally, compressing the glass fiber reinforcing and compacting the entire material assembly in its final form. The liquid plastic resin then hardens, the molds are opened, and the molding is removed from the mold.

3,704,971
SPINNERET ASSEMBLY

Eugene M. Baird, and John G. Ullman, both of Martinsville, Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 16, 1969, Ser. No. 833,535
Int. Cl. D01d *3/00*
U.S. Cl. 425—131 5 Claims

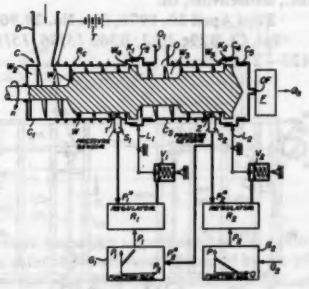


A spinneret assembly comprising sandwiched filter block, distribution plates and a spinneret plate is designed to produce a plurality of uniform sheath-core filaments with accurate regulation of sheath thickness without overcrowding extrusion orifices. The flow channels and passages are shaped and interconnected to provide uniform pressure and distribution of the sheath and core polymers across the plurality of extrusion orifices.

3,704,972
SELF-REGULATING EXTRUDER

Klaus Kneller, 8303 Nurensdorf; Daniel Poncet-Montange, 2900 Porrentruy; Jean-Louis Prost, 1205 Geneva, and Jean Trub, 1212 Grand-Lancy/Geneva, all of Switzerland, assignors to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed May 3, 1971, Ser. No. 139,517
Claims priority, application Switzerland, May 8, 1970, 6860/70
Int. Cl. B29f *3/02, 3/03*
U.S. Cl. 425—145 7 Claims



A screw-type extruder for plastic material has a cylindrical housing axially divided into two externally heated compartments provided at their upstream ends with a hopper and a venting aperture, respectively; at its downstream end each compartment terminates in a mobile housing section for ad-

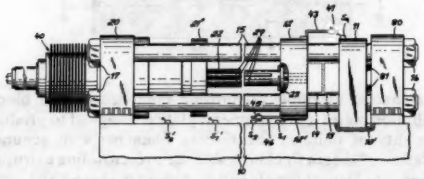
justment of the back pressure prevailing therein and, consequently, of the flow rate of plastic mass discharged from the compartment. To equalize the two flow rates, a pair of hydraulic jacks serving to shift these mobile sections are controlled by respective regulators which respond to associated function generators and to the corresponding back pressure as measured just ahead of these mobile sections; the first function generator receives at its input the back pressure of the second compartment whereas the second function generator is adjusted to deliver a constant output dependent upon the desired flow rate at the extrusion nozzle and upon the speed of rotation of the screw.

3,704,973

ELECTRO-HYDRAULIC MEANS FOR OPENING AND CLOSING INJECTION MOLDS

Robert Morrison Renfrew, Bramalea, Ontario, and Peter Leon Rees, Don Mills, Ontario, both of Canada, assignors to Husky Manufacturing & Toolworks, Ltd., Bolton, Ontario, Canada

Filed June 8, 1971, Ser. No. 151,107
Int. Cl. B29f *1/00*
U.S. Cl. 425—150 **10 Claims**



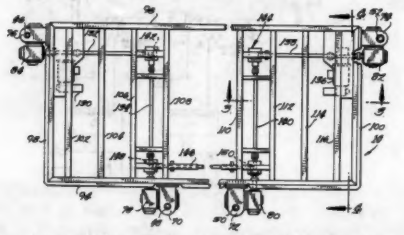
The movable platen of an injection-molding machine is rigid with a nonrotatable lead screw engaged by a rotatable drive nut which is splined to a tubular input shaft surrounding the rear end of the lead screw. A cylinder on the machine frame carries an axially movable piston which, upon a stopping of shaft rotation in the mold-closed position, is brought to bear under hydraulic pressure against the nut to clamp the mold between the platens against the tie bars anchored to the frame. The input shaft is powered by a reversible two-speed motor which is switched to low-speed operation in a terminal phase of a lead-screw stroke to absorb excess energy in a nondissipative manner.

3,704,974

MOLDING MACHINE

Robert E. Kostur, Oak Brook, Ill., assignor to Comet Industries, Inc., Bensenville, Ill.

Filed April 20, 1970, Ser. No. 29,901
Int. Cl. B29c *3/02*; B30b *15/06, 15/10*
U.S. Cl. 425—214 **2 Claims**



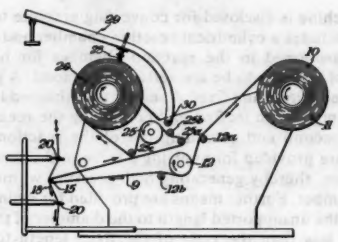
The four pinions that are mounted to a platen and engage four vertical racks in the molding station to position the platen of a molding machine vertically are driven by two motors with each motor driving a shaft that is connected at one end to a speed reducer with which it drives one pinion and is connected at its other end to a transverse shaft through a bevel gear, the transverse shaft being connected to another speed reducer by which the second pinion is driven. With two motors driving high rpm shafts that extend close to the four pinions, the platen has a better weight distribution, greater efficiency, greater torque at the pinions, more accurate positioning, more accurate braking and a longer stroke.

3,704,975

THERMOPLASTIC FILM SLITTING

William W. Bunting, Jr., Wilmington, Del.; Robert E. Buskirk, Pennsville, N.J.; John P. Hogan, and Elbert M. Mahla, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed April 7, 1971, Ser. No. 131,931
Int. Cl. B29h *3/00*
U.S. Cl. 425—305 **5 Claims**



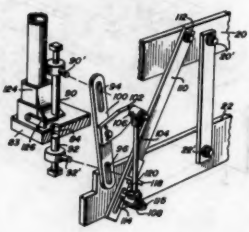
Process and apparatus for the scoring of thermoplastic sheet material, and the scored product thereof, wherein the sheet material is advanced relative to a polymeric filament scoring means at a differential speed effecting scoring.

3,704,976

TABLET PRESS

Ross Petersen, Route 3, Box 230, Astoria, Oreg.

Filed April 15, 1970, Ser. No. 28,825
Int. Cl. B41f *17/36*
U.S. Cl. 425—352 **10 Claims**



A pair of generally horizontal beams pivotally supported intermediate their opposite ends for oscillation about vertically spaced generally horizontal transverse axes and including one pair of ends swingable toward and away from a horizontal plane disposed therebetween and in which a die body is stationarily supported. The die body has an upright cylindrical mold passage formed therethrough and the one pair of ends of the beams support mold pistons projecting toward each other and reciprocal in the mold passage. The upper piston is oscillatable from an upper position spaced above the upper end of the mold passage to a lower position projecting downwardly into the upper end of the mold passage and the lower piston is oscillatable between a lower position spaced below the upper end of the mold passage and an upper position substantially flush with the upper end of the mold passage. Operating struc-

ture is provided for sequentially raising the upper piston to its upper position and lowering the lower piston to its lower position, registering the discharge end of a granular material chute with the upper end of the mold passage in order to fill the latter with material from which a tablet is to be pressed, swinging the chute out of registry with the upper end of the mold passage, lowering the upper piston to a position just entering the upper end of the mold passage, forcing the upper and lower pistons downwardly and upwardly, respectively, to press the material into a tablet while simultaneously rotating the pistons at least slightly in opposite directions, raising the upper and lower pistons to their upper positions, and then swinging the discharge end of the chute back into registry with the upper end of the mold passage, which last step also functions to brush or sweep the last formed tablet press from above the upper end of the lower piston. As the chute moves into final registry with the mold passage, the lower piston is lowered to its lower position in order that the mold cavity or passage thereabove may be again filled with granular material to be pressed into a tablet.

3,704,977

APPARATUS FOR MAKING HOLLOW ARTICLES

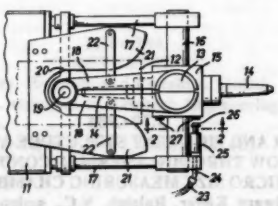
Stefan Fischer, Im Korresgarten 21, Beruf:Fabrikant, Lohmar, Germany

Filed Oct. 6, 1970, Ser. No. 78,394

Claims priority, application Germany, Oct. 9, 1969, P 19 50 911.6

Int. Cl. B29f 1/00

U.S. Cl. 425—326 **6 Claims**



This invention relates to an apparatus for the production of hollow articles, especially bottles and the like, from thermoplastic synthetic plastic material, having an injection mould for the formation of a pre-moulding, a blow mould for the blowing of the pre-moulding into the finished hollow article and blow mandrels serving as transport device between injection mould and blow mould and usable as mould core of the injection mould, several of which mandrels are arranged on one common carrier which can be stepped further intermittently in the working sequence of the machine.

3,704,978

APPARATUS FOR MANDREL COLLAPSING AND REASSEMBLING IN TUBE WIDENING EQUIPMENT

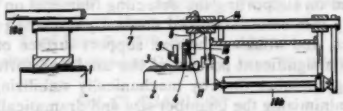
Karl Otto Leier, Mulheim-Ruhr; Hans Werner Spohr, Witten-Stockum, and Johannes von Riegen, Krefeld, all of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Nov. 12, 1970, Ser. No. 88,720

Claims priority, application Germany, Nov. 14, 1969, P 19 58 838.6

Int. Cl. B29c 17/00

U.S. Cl. 425—393 **12 Claims**



A collapsible mandrel, having core and segmented collar, is collapsed and reassembled through rotating positioning means. The collar segments are divided in two groups, whereby the smaller segments have radially outwardly tapering surfaces for engagement with the respectively interspaced, larger segments. The rotating positioning means control radial displacement of the two groups of segments in sequential operation, either through appropriate camming and a single control ring, or through two, independently operated control rings.

3,704,979

MOLD SECTION ELEVATING, CONVEYING AND OPENING MEANS

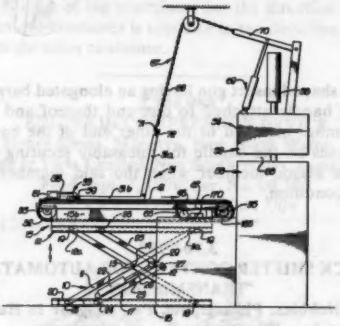
Walter H. Thiessen, Long Beach, Calif., assignor to Darnell Corporation, Ltd., Downey, Calif.

Division of Ser. No. 774,423, Nov. 8, 1968, Pat. No. 3,635,327.

This application Jan. 14, 1971, Ser. No. 106,585

Int. Cl. B29c 1/16

U.S. Cl. 425—451 **6 Claims**



The disclosure concerns equipment for rapidly loading and unloading loads (such as molds with respect to presses), and utilizing a load actuator movable on a load conveyor carried by a scissors linkage enabling precise and rapid movement of the load between positions on and off the conveyor.

3,704,980

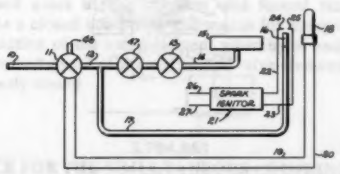
HEATING SYSTEM

Hendricus Johannes Lokkart, Arleta, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed March 25, 1971, Ser. No. 127,884

Int. Cl. F23q 9/08

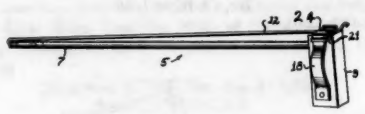
U.S. Cl. 431—43 **5 Claims**



A heating system including a spark ignitor for a pilot burner which utilizes a safety shut off valve operated by the pilot thermocouple when the pilot goes out, wherein the ignitor is connected in parallel with the thermostat. If an air or gas disturbance causes the pilot to go out, the same disturbance or a temporary electric power failure may prevent or delay pilot reignition. If the safety valve closed before reignition, no hazard exists. However, if the safety valve is still open while initially no reignition occurs, the thermostat opens the main valve and reignition is thus prevented for a relatively long

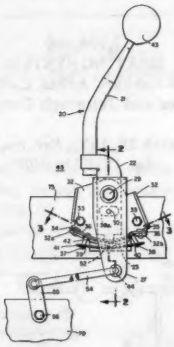
time, e.g., several seconds, a large amount of gas can be dumped into the combustion chamber, mixed with air therein and exploded by delayed ignition. In the unique hook-up where the ignitor is connected in parallel with the thermostat, no delayed ignition can take place. If the pilot has not been reignited prior to the thermostat switch closing, i.e., calling for heat, the ignitor will be disabled by the thermostat switch thus preventing ignition.

3,704,981
FLY GUN
Jack Pohr, 12 Garden Drive, El Paso County, Colo.
Filed Dec. 31, 1970, Ser. No. 103,057
Int. Cl. A01m *3/00*
U.S. Cl. 43—135 **2 Claims**



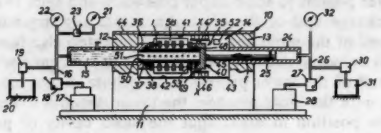
A pistol shaped insect gun having an elongated barrel and a depending handle attached to one end thereof and with an elastic member attached to the other end of the barrel and having means on the handle for releasably securing the free end of the elastic member when the said member is in a stretched condition.

3,704,982
STICK SHIFTER CONTROL FOR AUTOMATIC TRANSMISSION
James F. Hobbins, Philadelphia, Pa., assignor to Hurst Performance, Inc., Warminster, Pa.
Filed Feb. 12, 1971, Ser. No. 114,837
Int. Cl. G05g *7/00*
U.S. Cl. 74—473 R **7 Claims**



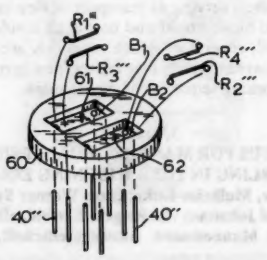
A stick control for use with an automatic transmission is disclosed in which a stick-operated shift lever is provided for manual selection of the various control valve positions of the automatic transmission. The stick bottom projects through a fixed gate opening, which gate cooperates with a spring-held cam, said gate and cam providing a series of fixed stops, guides, sloped surfaces, barriers and a locking pocket. One of said slopes provides a deflectable barrier which divides the gate so that forward gears are arranged on one side for positive and accurate upshifting and downshifting, and the gear positions used in automatic driving are located on a second side. A lock arrangement is provided for the park position.

3,704,983
METHOD OF AND APPARATUS FOR THE FORMATION OF TUBULAR ARTICLES
Raymond Jean Bernard Tellot, Paris, France, assignor to Etablissements Butin-Gillet, Pantin, France
Filed Dec. 4, 1970, Ser. No. 95,195
Int. Cl. B21d *15/10*
U.S. Cl. 72—59 **4 Claims**



In the formation of corrugated tubes, forming members are arranged around the periphery of the tube at spaced axial intervals. The forming members are first locked in their axial positions and hydraulic pressure is applied internally of the tube to form initial corrugations in the tube between the forming members. The forming members are then released for axial movement and the internal pressure is continued simultaneously with the application of axial pressure through the forming members.

3,704,984
CHAMBER AND FILAMENT STRUCTURE AND METHOD FOR FLOW THROUGH THERMAL CONDUCTIVITY MICRO SIZE MEASURING CHAMBERS
Michael Edward Kiefer, Raleigh, N.C., assignor to Triangle Environmental Corporation, Raleigh, N.C.
Filed May 17, 1971, Ser. No. 143,836
Int. Cl. G01n *27/18*
U.S. Cl. 73—27 R **10 Claims**



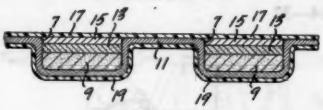
A chamber and filament structure and method of chamber formation and filament support for micro size, i.e. 10 microliters or less, thermal conductivity measuring chambers are based on supporting the detecting filaments on a suitable relatively thin electrically and thermally insulating substrate, e.g. mica, and utilizing the wall support surface of the substrate as a significant portion of the total wall surface of the detecting chamber thereby mechanically stabilizing the filaments, minimizing the chamber size and dramatically increasing the ability of the chamber to detect the presence and concentration of minute quantities of unknowns, e.g. insecticide on a lettuce leaf.

3,704,985

TEMPERATURE INDICATOR

Charles G. Pickett, Andover, and Desh D. Chadha, Dover, both of N.J., assignors to Bio-Medical Sciences, Inc., Fairfield, N.J.

Filed March 4, 1971, Ser. No. 120,891
Int. Cl. G01k *11/06, 11/12*
U.S. Cl. 73—356 13 Claims



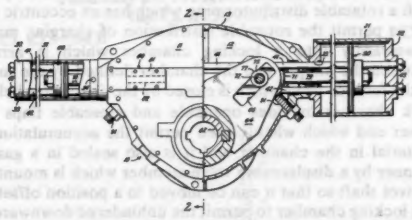
Temperature indicators are provided comprising a heat-conductive carrier having at least one, but preferably a plurality of regions (cavities) thereon, each region containing a thermally responsive substance which undergoes a change of state at a precise and predetermined temperature different from the temperature of the change of state of the thermally responsive substance in any other region. The temperatures at which such changes of state occur are detected visually by an indicator system which is intimately associated with the thermally responsive materials in these regions. The incorporation of certain organic compounds into the indicator system accelerates visual detection of such change of state, thus permitting rapid measurement of the temperature corresponding to the incipient fusion of the thermally responsive material in each region.

3,704,986

ACTUATOR

John M. Sheesley, Houston, and Ronald A. Gulick, Sugarland, both of Tex., assignors to Research Engineering Company, Houston, Tex.

Filed Dec. 9, 1970, Ser. No. 96,461
Int. Cl. F01b *9/00*
U.S. Cl. 92—138 3 Claims



A device for translating longitudinal motion into rotational movement. Combination guide and tie rods are provided, along which one or more pistons run, which pistons are linked to a rotatable yoke member by removable linking means. Removal of such linking means permits piston movement without resultant yoke rotation.

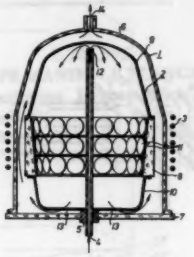
3,704,987

DEVICE FOR THE EPITAXIALY DEPOSITION OF SEMICONDUCTOR MATERIAL

Heinz-Herbert Arndt, and Edwin Nosch, both of Heilbronn, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H, Frankfurt am Main, Germany

Filed June 5, 1970, Ser. No. 43,776
Claims priority, application Germany, June 10, 1969, P 19 29 422.5
Int. Cl. C23c *13/08*
U.S. Cl. 118—48 12 Claims

A device for the epitaxial deposition of semiconductor material on a substrate, which device comprises two containers one located inside the other, the substrate being provided inside one of the containers and gas necessary for the epitaxial deposition being introduced into the containers in such a manner that a substantially vertical flow of gas is formed in each of the containers but the direction of flow of the gas in one container is opposite to the direction of flow of the gas in the other container.

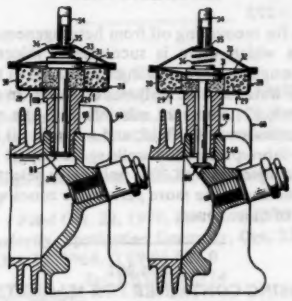


3,704,988

ENGINE DECOMPRESSION DEVICE

William Henry Steele, Milperra, New South Wales, Australia, assignor to Victa Limited, New South Wales, Australia

Filed Sept. 3, 1970, Ser. No. 69,383
Int. Cl. F01l *13/08*; F02n *17/08*
U.S. Cl. 123—182 8 Claims



A decompressing device for the firing chamber of an internal combustion engine during only low cranking speed, comprising a venting valve for the chamber, a housing therefor screwed to a port in the chamber, a valve element exposed to compressed gases in the chamber and forced temporarily thereby to a closed condition, and means for damping return opening action of the valve element whereby at and above a predetermined speed of the engine the valve element remains continuously closed.

3,704,989

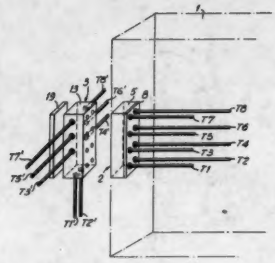
DEVICE FOR THE SIMULTANEOUS COUPLING AND UNCOUPLING OF A PLURALITY OF FLUID PIPELINES

Claude Jean Maurice Decot, Tarbes, and Jean Eugene Darmagnac, Juillan, both of France, assignors to Etat Francais represente par le Ministre d'Etat charge de la Defense National-Delegation Ministeriell pour de la Porte d'Issy, Paris, France

Filed Feb. 19, 1971, Ser. No. 116,813
Int. Cl. F16k *11/10*
U.S. Cl. 137—595 7 Claims

A coupling device for simultaneous coupling or simultaneous uncoupling of a plurality of fluid pipelines at low pressure or high pressure, comprises two blocks connectable with each

other and each joined to respective pipelines and having the same number of passages for fluid. Each block has in each passage a spring loaded valve normally in closed position and an external control plate is attachable to one block to depress



rods acting on the valves of this block and concurrently the valves pertaining to the other block to open both sets of valves and permit fluid flow in either direction through the passages in the blocks.

3,704,990

PROCESS FOR RECOVERING OIL FROM HETEROGENEOUS RESERVOIRS

Amir M. Sarem, Yorba Linda, and Leroy W. Holm, Fullerton, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 853,483, Aug. 27, 1969, abandoned. This application June 4, 1971, Ser. No. 150,239

Int. Cl. E21b *43/22*

U.S. Cl. 166—273 **15 Claims**

A process for recovering oil from heterogeneous petroleum reservoirs in which there is successively injected into the reservoir through one or more injection wells (1) an aqueous solution of a water-soluble polymer dissolved in substantially salt-free water, (2) a solvent miscible with the reservoir oil, and (3) an aqueous drive fluid; and wherein oil is recovered from one or more production wells spaced apart in the reservoir from the injection well. The polymer is selected to obtain mobility reduction in the more permeable zones without causing plugging of these zones.

3,704,991

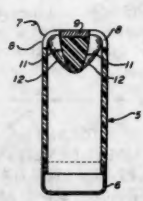
DISPENSING CONTAINER FOR MAGNETIZABLE ARTICLES

Robert M. Leedy, 7 Martindale Road, Short Hills, N.J.

Filed July 7, 1971, Ser. No. 165,813

Int. Cl. A45c *11/00*

U.S. Cl. 206—1 R **4 Claims**



A dispensing container for magnetizable articles, such as paper clips, nails, screws and similar metallic articles, it provided with a magnet at the outlet openings thereof to retain such articles at such openings for ready removal as desired. The container walls are angulated in the direction of such openings, so as to in no way impede the egress of the articles from the container through its openings for removal by a user.

3,704,992

CHARGING APPARATUS CONSTRUCTION FOR A BLAST FURNACE

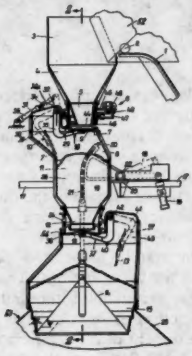
Pieter Hendrik Nieboer, Kapellen, Germany, assignor to DEMAG Aktiengesellschaft, Wolfgand Reuter-Platz, Duisburg, Germany

Filed May 11, 1970, Ser. No. 35,989

Claims priority, application Germany, March 5, 1970, P 20 10 346.2

Int. Cl. F23k *3/00*

U.S. Cl. 214—37 **9 Claims**



A shaft furnace particularly a blast furnace which is operated at high pressures includes a furnace head having a top pan with a distributor bell therein which is movable upwardly to close the top pan to permit an accumulation of charging material thereover and which may be moved downwardly to provide an annular charging opening for the material to drop off the bell into the furnace. The construction includes a charging hopper which may be arranged above the furnace and located to receive a charge of material, for example, by delivery on a carriage which moves over the skip-type conveyor. The charging hopper includes a lowermost portion with a rotatable distributor pipe which has an eccentric opening to permit the rotatable distribution of charging material downwardly into a locking chamber which is arranged between the hopper and the chamber defined by the top pan of the furnace head which is closed by the distributor bell. The lock chamber includes openable and closeable flaps at its lower end which when closed permit the accumulation of a material in the chamber and it is also sealed in a gas tight manner by a displaceable valve member which is mounted on a pivot shaft so that it can be moved to a position offset from the locking chamber to permit the unhindered downward flow of the material from the lock chamber into the furnace above the distributor bell during charging periods. The top of the lock chamber is closed by a valve member which may be opened by displacing it into an offset chamber portion out of the way of the flowing material to open the passage between the hopper and the lock chamber. the inlet valve to the lock chamber, at the top thereof, is opened when the pressure in the lock chamber returns substantially to atmospheric pressure. The inlet opening and the discharge opening of the lock chamber are advantageously arranged in vertical alignment but may be offset if so desired.

3,704,993

DRIVE SYSTEM FOR STRIP MATERIAL

Gaetano Monaco, Hamilton, Ontario, Canada, assignor to The Steel Company of Canada Limited

Filed July 27, 1970, Ser. No. 58,332

Int. Cl. B65h *59/38*

U.S. Cl. 242—75.53 **49 Claims**

The specification and drawings disclose a regenerative drive system for transferring and conserving energy in a process line

of a strip steel mill. Coiled steel is unwound from a pay-off reel with the aid of helper rollers and proceeds through different treatments. A pay-off pump is operatively connected to, is driven by, and acts as a drag on the pay-off reel thus creating tension in the strip. A metering motor is driven by the pay-off pump and is directly connected to an electric motor by means of a shaft in order to aid the electric motor in driving a hydraulic helper roller pump. The hydraulic helper drive pump is in

fluid communication with and ordinarily drives one or more hydraulic motors in parallel which motivate the helper rollers. The metering motor and the hydraulic pump are mechanically connected to each other through the electric motor. In this manner energy can be redistributed between the pay-off reel and the helper rollers. One way in which the energy can be redistributed is by having at least some of the pumps convert to motors and vise versa in order to aid in driving the other elements.

3,704,994

WRIST SUPPORT AND PALM PAD FOR BOWLING

Robert J. Krzewinski, Opa Locka, and Henry J. Kirchgessner, Miramar, both of Fla., assignors to Rev Master Industries, Inc., Pembroke Pines, Fla.

Filed May 24, 1971, Ser. No. 146,397
Int. Cl. A63b 71/14
U.S. Cl. 273—54 B **1 Claim**

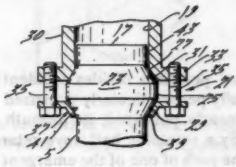
A wrist support for bowling having an arcuate and relatively rigid portion for engaging the back of a bowler's hand and wrist and preventing any relative movement between the bowler's hand and wrist with a first pliable portion extending along one edge of the rigid portion contacting the palm of the bowler's hand and a resilient pad mounted on the pliable portion to engage a bowling ball and a second pliable portion extending along the other edge of the rigid portion for wrapping about the bowler's wrist. Both pliable portions having straps and buckles for fastening the wrist support in firm and relatively tight contact relation with the bowler's hand and wrist.

3,704,995

PIPE MANIFOLD FLANGE

Theodore W. Hetherington, Jackson, Mich., assignor to Tenneco Inc., Racine, Wis.

Filed May 5, 1971, Ser. No. 140,501
Int. Cl. F16l 25/00
U.S. Cl. 285—332 **1 Claim**



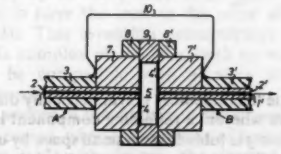
Means for attaching an exhaust pipe to an exhaust manifold comprises an annulus having conical sides that is expanded near the end of the exhaust pipe and held tightly against the manifold by an attachment pad that is loosely mounted on the exhaust pipe.

3,704,996

OPTICAL COUPLING ARRANGEMENT

Manfred Borner, D-79 Ulm, Danube; Stefan Maslowski, D-7911 Aufheim, and Oskar Krumpholtz, D-79 Ulm, Danube, all of Germany, assignors to Licentia Patent-Verwaltungs-gesellschaft m.b.H, Frankfurt am Main, Germany

Filed Oct. 22, 1970, Ser. No. 82,937
Claims priority, application Germany, Oct. 23, 1969, P 19 53 283.3; Oct. 23, 1969, G 69 41 157.0
Int. Cl. G02b 5/14
U.S. Cl. 350—96 WG **13 Claims**



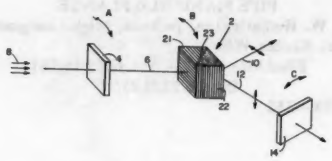
An optical coupling arrangement for coupling the data modulated light beam from the output of one optical device to the input of a further optical device which permits transmission of the desired band width but substantially avoids mode mismatching. The desired coupling is achieved by providing a pair of reflective surfaces, i.e. mirrors, which face one another and are spaced with respect to one another so that they define an optical resonator for the wavelength of the light to be transmitted in the coupling medium therebetween, connecting the output of one of the optical devices to a light permeable aperture in one of the reflective surfaces and connecting the input of the other optical device to a light permeable aperture in the other of the reflective surfaces.

3,704,997

VARIABLE AMPLITUDE POLARIZING BEAM SPLITTER

Luther W. Smith, Brimfield, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed May 19, 1971, Ser. No. 144,922
Int. Cl. G02f 1/24
U.S. Cl. 350—157 4 Claims



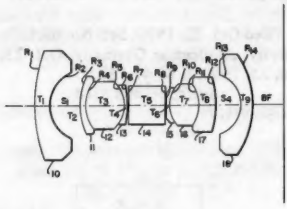
A birefringence polarizer divides incident light into two emergent, mutually perpendicularly polarized beams. The incident light is linearly polarized, its azimuth of polarization being rotatable by a rotatable half-wave retardation plate. A similar plate in the path of one of the emergent beams controls its azimuth of polarization. The emergent light beams are thus controllable as to relative intensity and directions of polarization.

3,704,998

WIDE ANGLE COMPACT PROJECTION LENS ASSEMBLY

John R. Miles, Glenview, Ill., assignor to Microdisplay Systems, Inc., New York, N.Y.

Filed April 19, 1971, Ser. No. 135,071
Int. Cl. G02b 9/58
U.S. Cl. 350—216 1 Claim



A wide angle lens assembly is symmetrically disposed about a central space wherein a reflecting component is positioned. The lens assembly is folded into a small space by use of a right-angled total reflecting prism in the central space. The lens system has a speed of *f*/ 4 and a total field angle of 90°. The outer lens components are negative to obtain a wide angle of view.

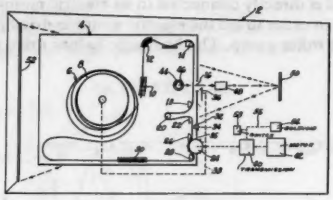
3,704,999

AUTOMATIC STOP CIRCUIT FOR MOTION PICTURE PROJECTOR

Mark A. Hutner, Glenview, Ill., assignor to Elco Corporation, Jenkintown, Pa.

Filed July 29, 1970, Ser. No. 59,226
Int. Cl. G03b 21/48
U.S. Cl. 352—92 6 Claims

A sound motion picture projector which includes a control circuit responsive to the presence of an audio signal having a predetermined frequency on the sound track of the film being projected to interrupt the film drive means, whereby a particular frame of the film may be automatically projected as a still picture.



3,705,000

LIQUID SAMPLE HOLDER FOR A PHOTOMETER

John P. Guerra, Buffalo, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed June 1, 1971, Ser. No. 148,815
Int. Cl. G01n 1/10; G02b 21/34
U.S. Cl. 356—246 1 Claim

A unitary liquid sample chamber of injection-molded transparent material defining a collection well and a capillary space.

3,705,001

TRANSITION RAMP FOR HIGH SPEED ROLLER TRACK CONVEYORS

Gerhard Lingg, Leimen, and Alfred Hirth, Lampertheim, both of Germany, assignors to Mounesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Aug. 9, 1971, Ser. No. 170,051
Claims priority, application Germany, Feb. 17, 1971, P 21 07 491.9
Int. Cl. B65g 47/22
U.S. Cl. 198—20 4 Claims

Construction of a lower landing and transition ramp for a high speed roller track conveyor having horizontal and

inclined flights and being used for baggage handling in airport terminals or the like. The conveyor moves pallets or the like, each having a pair of sled runners. The transition ramp has a pair of endless conveyor belts, each having a first straight, horizontal track portion, defining the lower landing, a straight inclined portion in line with said inclined flight, and a concave control portion as transition between the two straight portions, whereby the two straight portions each having approximately the length of one of the pallets. Additionally, there are guide rolls on the pallet for maintaining the runners thereof respectively on the belts, and there are bars over which the upper portion of the belts slide, for load support proper.

3,705,002

BEARING SECTIONS FOR THE COVERING WITH MARBLE PLATES, PANELS AND THE LIKE OF WALLS BOTH UNINTERRUPTED AND INTERRUPTED BY DOORS, WINDOWS AND THE LIKE

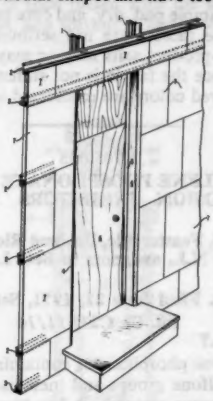
Giovanni Varlonga, Via B Verro n. 90, Milano, Italy

Filed Aug. 6, 1969, Ser. No. 847,953

Int. Cl. E06b *1/18*

U.S. Cl. 52—213 **5 Claims**

Bearing sections consisting of vertical sections, horizontal sections used when the building walls are not interrupted by frames, horizontal sections used when the building walls are interrupted by frames, and connecting sections. The bearing sections are of particular shapes and have teeth or appendices



which allows the sections to be connected together as well as the building walls to be covered by, for example, marble plates in a dry manner.

CHEMICAL

3,705,003

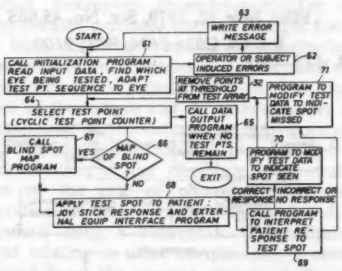
COMPUTER CONTROLLED METHOD FOR AUTOMATIC VISUAL FIELD EXAMINATION

John R. Lynn, Dallas, and George W. Tate, Jr., Fort Sam Houston, Tex., assignors to the United States of America as represented by the Secretary of Department of Health, Education, and Welfare

Filed July 13, 1970, Ser. No. 54,289

Int. Cl. A61b *3/02, 3/10*

U.S. Cl. 351—39 **25 Claims**


START
63
WRITE ERROR MESSAGE
61
CALL INITIALIZATION PROGRAM READ INPUT DATA FIND WHICH EYE BEING TESTED ADAPT TEST PT SEQUENCE TO EYE
OPERATOR OR SUBJECT INDUCED ERRORS
62
71
REMOVE POINTS AT THRESHOLD FROM TEST ARRAY
72
PROGRAM TO MODIFY TEST DATA TO INDICATE SPOT MISSED
64
SELECT TEST POINT (CYCLIC TEST POINT COUNTER)
CALL DATA OUTPUT PROGRAM WHEN NO TEST PTS. REMAIN
65
67
CALL BLIND SPOT MAP PROGRAM
YES
MAP OF BLIND SPOT
66
70
PROGRAM TO MODIFY TEST DATA TO INDICATE SPOT SEEN
NO
68
EXIT
CORRECT RESPONSE
INCORRECT OR NO RESPONSE
APPLY TEST SPOT TO PATIENT: JOY STICK RESPONSE AND EXTERNAL EQUIP INTERFACE PROGRAM
CALL PROGRAM TO INTERPRET PATIENT RESPONSE TO TEST SPOT
69

An illustrative embodiment of the present invention includes both method and apparatus for determining the threshold value of visual stimuli presented at selected locations in the visual field of a subject. Programmed automatic data processing equipment is utilized in a unique two way feedback system with an external apparatus to present the stimuli in an unpredictable fashion and a subject response device. The subject communicates with the data processing equipment via the subject response device and the system interprets the responses to dynamically alter the stimulus presentation regime while communicating a feedback to the subject of correct or incorrect perception of a given stimulus.

3,705,004

PAD BATH FORMULATION OF IRON SALT, POTASSIUM PERMANGANATE, AMMONIUM OXALATE AND ZIRCONYL AMMONIUM CARBONATE

Charles J. Conner, Metairie, La., assignor to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application May 19, 1970, Ser. No. 38,900, now Patent No. 3,671,178. Divided and this application Mar. 21, 1972, Ser. No. 236,590

Int. Cl. C09b *61/00*

U.S. Cl. 8—52 **3 Claims**

Orange to brown mineral dyeings are conventionally prepared from two bath systems, where the fabric is wetted with one bath containing an iron salt, and then wetted with another bath containing alkali, to cause the colored iron oxide to deposit in the fabric as a mineral dye. This has been necessary up to now, since it has been chemically incompatible to have the iron in the same alkaline bath with the alkali. This invention demonstrates that a heat decomposable complex of the iron, with or without manganese, can be compatible with alkaline zirconyl ammonium carbonate solutions in the same bath, when cellulosics can be wetted in this bath, and subsequently mineral dyed by heat curing, when the complex of iron decomposes to deposit iron oxide with zirconia, the zirconyl ammonium carbonate decomposing at the same time to deposit zirconia. When heptavalent manganese ($KMnO_4$) is incorporated into the bath with the complexed iron, it is soluble and compatible, producing manganese dioxide (MnO_2) by reduction products from the iron complex, resulting in various shades or orange to brown with the iron oxide and zirconia also deposited. This process makes it possible to deposit orange to brown wash-fast mineral dyeings from a single bath. The deposited zirconia attributes a degree of water repellency and algaecidal resistance to the fabric, and a copper or phenyl-mercury salt can be incorporated into the zirconyl ammonium carbonate component of the system to deposit a fungicidal mineral dye of orange to brown shade on heat curing, making it possible to apply an iron and/or manganese mineral dye with or without

fungicide from a single bath, reducing conventional dyeing procedures from two or more baths, to a single bath requiring only a simple pad, dry, and cure procedure to effect the dyeing. The fabrics are not seriously tendered, and the residual by-product salts may or may not be removed by washing, since the fabric is not stiffened by their presence and the dyed colors are unaffected on standing.

3,705,005

AMINOALKYLENE PHOSPHONATE DERIVATIVES AS CORROSION INHIBITORS IN AQUEOUS SYSTEMS

Frank R. Cervi, Feasterville, Pa., and Richard G. Tonkyn, Frenchtown, N.J., assignors to Betz Laboratories, Inc., Trevose, Pa.

No Drawing. Filed June 21, 1971, Ser. No. 155,303

Int. Cl. C23f *11/16*

U.S. Cl. 21—2.7 **11 Claims**

Aminoalkylene phosphonates containing sulfur, oxygen, sulfoxide or sulfone groups and their use as corrosion inhibitors in aqueous systems. It has been discovered that compounds of this nature not only yield satisfactory anodic inhibition, but also very desirable cathodic corrosion inhibition when added to aqueous systems in an effective amount, e.g. ranging from 1 to 1000 parts per million parts by weight of the aqueous system.

3,705,006

METHOD FOR CARRYING OUT HIGH TEMPERATURE REACTIONS

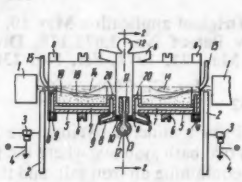
Tibor Kugler, Sins, Switzerland, assignor to Lonza, Ltd., Gampel/Valais, Switzerland

Filed Sept. 1, 1970, Ser. No. 68,628

Claims priority, application Switzerland, Sept. 4, 1969, 13,378/69

Int. Cl. C01g *1/00, 23/04*

U.S. Cl. 423—659 **3 Claims**



The invention is concerned with a method and device for carrying out high temperature reactions which take place with a supply of energy which produces the temperature required for the reaction to take place. The reaction is carried out in a two-part reaction chamber with the reaction components flowing in opposite directions to a separation gap, and the reaction products are chilled and removed at the separation gap by means of a flow component forced into a direction perpendicular to the axis of the reaction chamber.

3,705,007

PROCESS FOR THE PREPARATION OF AMMONIUM BIFLUORIDE FROM AMMONIUM FLUORIDE

Bernard M. Lichstein, Elizabeth, and Cyril Woolf, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Aug. 25, 1970, Ser. No. 66,906

Int. Cl. C01c *1/16;* C01b *9/08*

U.S. Cl. 423—471 **5 Claims**

Aqueous solutions of ammonium fluoride can be transformed into a substantially anhydrous mixture containing at least 90% ammonium bifluoride and correspondingly 10% or less of ammonium fluoride by distilling off a portion of the aqueous component of the solution at a pot temperature ranging up to about 150° C. until said solution contains from 5 to 30% water based on the original weight of ammonium fluoride, and then continuing heating the solution until at least about 90% of the nonaqueous solution component is ammonium bifluoride, with sufficient water being added to replace that lost during said continued heating so as to maintain the water content of the solution at from about 5% to about 30% and then rendering the mixture substantially anhydrous by removing the residual water at a temperature ranging from about 50° C. up to 130° C. at a pressure of less than about 700 mm. of mercury.

3,705,008

PROCESS FOR THE PRODUCTION OF HYDRAZOIC ACID

William K. Snead, Wheeling, and John F. Knoop, New Martinsville, W. Va., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 24, 1970, Ser. No. 92,374

Int. Cl. C01b *21/08*

U.S. Cl. 423—406 **28 Claims**

Hydrazoic acid is produced by acidifying alkali metal azide or alkaline earth metal azide. In order to repress contamination of the hydrazoic acid vapor with the feed acid, a cascade of stages of decreasing pH is employed. Hydrazoic acid vapor is removed from the cascade under conditions of relatively high pH and by-product solution is removed from the cascade under conditions of relatively low pH.

3,705,009

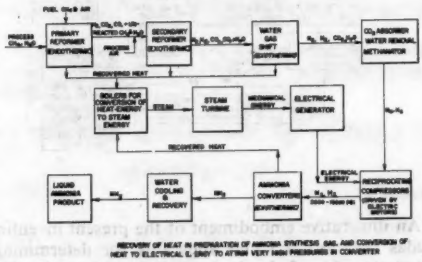
HEAT RECYCLING FOR AMMONIA PREPARATION

Charles Dougherty, Memphis, Tenn., assignor to W. R. Grace & Co., New York, N.Y.

Filed June 12, 1970, Ser. No. 45,685

Int. Cl. C01c *1/04;* B01j *9/00*

U.S. Cl. 423—361 **3 Claims**



RECOVERY OF HEAT IN PREPARATION OF AMMONIA SYNTHESIS GAS, AND CONVERSION OF HEAT TO ELECTRICAL E. ENGY TO ATTAIN VERY HIGH PRESSURES IN CONVERTER

Ammonia synthesis gas is charged to the ammonia converter under high pressure using reciprocating compressors driven by electric motors using electricity derived from steam turbines, which in turn use steam deriving from heat deriving mainly from primary and secondary reformers, shift converters, and ammonia converter in the ammonia synthesis gas preparation. The product ammonia is recovered as liquid by cooling the effluent from the converter with liquid water.

3,705,010
RECOVERY OF BROMINE FROM ORGANIC BROMIDES

Ralph A. Davis, Midland, and Ronald G. Tigner, Coleman, Mich., assignors to The Dow Chemical Company, Midland, Mich.

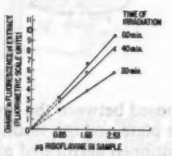
No Drawing. Filed Dec. 7, 1970, Ser. No. 95,881
Int. Cl. C01b 7/10, 7/12
U.S. Cl. 423—502 8 Claims

Disclosed in a process for the recovery of bromine values as Br_2 from organic bromides. The process involves reacting the organic bromide with oxygen at an elevated temperature in the presence of a catalyst. The catalyst is selected from one or more of the oxides of chromium, vanadium, tungsten, molybdenum, cerium, uranium or aluminum.

3,705,011
PHOTODECOMPOSITION METHOD AND APPARATUS

Henry Courtenay Neville Clarke, 48 Frederick St., Port of Spain, Trinidad, West Indies

Filed Feb. 27, 1970, Ser. No. 15,094
Int. Cl. A61l 3/00; G01n 21/24, 33/16
U.S. Cl. 23—230 B 12 Claims



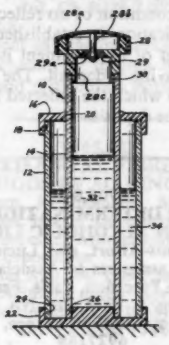
A photodecomposition method and apparatus for rapidly and dependably evaluating the riboflavin concentration in a large number of whole blood and urine samples as a diagnostic index of the riboflavin nutritive status to clarify the role of riboflavin in metabolic disturbances, and partcularly in liver disease and diabetes mellitus. The apparatus holds rows of samples which are subjected to controlled, incomplete photodecomposition through exposure by parallel overhead tropical daylight fluorescent lamps, at least one lamp disposed longitudinally along each two rows of sample containers, a preselected distance over the samples for a preselected time. The change in fluorescence of the sample and the standard over a given period of exposure is proportional to the riboflavin concentration. The method relating to blood samples comprises determination of the riboflavin concentration by comparison of the rate of photodecomposition of a butanol-pyridine extract of whole blood with a direct internal standard using a conventional photofluorimeter. The method relating to urine samples uses a conversion factor derived from the average change in fluorescence of standard solutions which will convert the rate of photodecomposition of samples directly to riboflavin concentration.

3,705,012
METHOD AND APPARATUS FOR MEASURING THE PEROXIDE CONTENT OF FATS

Ralph A. Marmor and Lawrence C. Brandberg, Minneapolis, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed May 18, 1970, Ser. No. 38,284
Int. Cl. G01m 21/06, 31/22, 33/02
U.S. Cl. 23—230 R 3 Claims

A fat solvent is placed within one compartment of a test receptacle; a solution of an indicator and sodium thiosulfate is contained in a second compartment. A predetermined amount of potassium iodide is added to the solvent. The fat is then mixed with the solvent. Finally, the mixture of fat and solvent is mixed with the sodium thiosulfate and indicator solution. The presence of a deep blue color indicates a peroxide value above that which is usable.



3,705,013
ANALYTICAL PROCEDURES AND COMPOSITIONS THEREFOR

Peter B. Dewhurst, San Gabriel, Calif., assignor to Xerox Corporation, Rochester, N.Y.

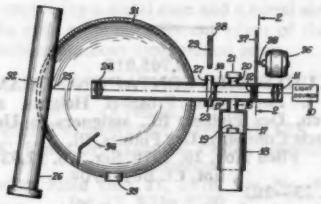
No Drawing. Filed Jan. 5, 1970, Ser. No. 800
Int. Cl. G01n 21/00, 33/16
U.S. Cl. 23—230 B 14 Claims

Analytical procedure for the quantitative determination of creatinine in blood serum wherein a neutral or alkaline pH up to about 10.3, preferably about 9.5 to about 10.3, is developed in the sample-reagent blank procedure. A significant advantage of this pH control technique is that it eliminates the need for a protein-free filtrate.

3,705,014
THERMAL OXIDATION TESTER HEATER TUBE DEPOSIT EVALUATOR AND METHOD OF USING

Malcolm G. Townsley, Park Ridge, Ill., assignor to Erdco Engineering Corporation, Addison, Ill.

Filed Aug. 20, 1970, Ser. No. 65,625
Int. Cl. G01n 25/24, 21/24, 21/48
U.S. Cl. 23—230 PC 11 Claims



A chopped light beam is divided into a measuring beam and a reference beam. The measuring beam is impinged on a thermal oxidation tester heater tube. After integration of the light reflected from the tube, an electrical

signal representative of the intensity of that light is developed and compared with an electrical signal generated from the reference beam. Due to the chopping of the light these are alternating current signals. Initially, the point of impingement on the tube is a clean area and the output indication of the electrical signals is established at zero. Thereafter, a condition of no reflection is established and the output indication is established at a maximum. Thereafter, the point of impingement is established at an area on the tube having a deposit. The output indication reflects the extent to which the reflected light is diminished by the presence of the deposit.

3,705,015

APPARATUS FOR DETERMINATION OF ALCOHOL TITER IN ALCOHOLIC LIQUIDS

David Bono, Maisons-Alfort, and Lucien Prud'hon, Ris-Orangis, France, assignors to Association des Ouvriers en Instruments de Precision, Paris, France

Filed Aug. 5, 1970, Ser. No. 61,234
Claims priority, application France, Aug. 7, 1969, 6927168
Int. Cl. B01n *31/16, 33/14, 25/14*
U.S. Cl. 23—253 R **9 Claims**

An apparatus for the determination of the alcohol content of an alcoholic liquid, especially alcoholic beverages of the fermentation or distillation types. A small known quantity of the alcoholic beverage is heated to distill the alcohol thereof into a predetermined quantity of a mineral oxidizing agent of known concentration and present in excess. The alcohol is converted to acetic acid and the unreacted oxidizing agent is titrated with a reducing agent of known normality, the endpoint being detected by monitoring the redox potential. Increments of addition of the reducing agent are counted whereby the alcohol titer is read out directly upon a counter.

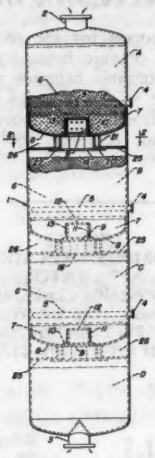
3,705,016

FLUID-SOLIDS CONTACTING CHAMBER

Orville I. Ludwigsen, Prospect Heights, and Daniel Dudych, Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 20, 1970, Ser. No. 92,037
Int. Cl. B01j *9/04*
U.S. Cl. 23—283 **3 Claims**

An apparatus for contacting a fluid in a fluid-solid contacting zone such as an adsorption zone or a reaction zone. The apparatus is comprised of an elongated chamber having a horizontally positioned imperforate plate with a centrally disposed opening therein for holding and retaining an upper bed of particulated contact solids. A fluid introduction means such as a perforate conduit extends from centrally disposed opening into the upper bed of contact solids. Spaced below the opening is a second horizontally positioned imperforate plate and vertical



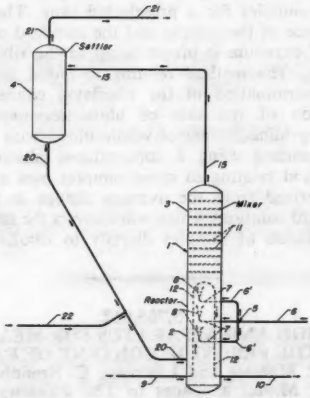
baffle means interposed between the first horizontally positioned imperforate plate and the second imperforate plate. A horizontally positioned perforated plate means is spaced below the imperforate plate means.

3,705,017

APPARATUS FOR A CATALYTIC REACTION

Edwin K. Jones, Kenilworth, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

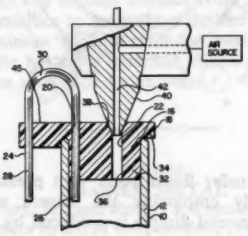
Filed Nov. 27, 1970, Ser. No. 93,346
Int. Cl. B01j *9/16*
U.S. Cl. 23—288 E **1 Claim**



An apparatus comprising the combination of a catalytic reaction chamber, a mixing chamber above the reaction chamber establishing turbulent flow of any unreacted

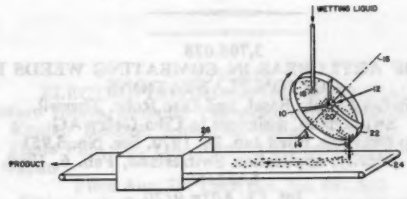
reactants and the catalyst, and a settling chamber communicating with the downstream end of the mixing chamber and having a product outlet and a catalyst outlet. The settling chamber is disposed above the reaction chamber to thereby establish a continuous circuitous free flow of catalyst between the reaction chamber, mixing chamber and settling chamber.

3,705,018
RESEALABLE TEST TUBE
Billy W. Taylor, 2965 Mi Elana Circle, Walnut Creek, Calif. 94598
Filed June 10, 1970, Ser. No. 45,083
Int. Cl. G01n *1/10*
U.S. Cl. 23—292 **16 Claims**



An open ended test tube into which a resilient, sealing plug is inserted. A U-shaped flow tube extends removably through a pair of spaced apart apertures in the plug and maintains the test tube sealed. Withdrawal of one tube end from one of the apertures and application of a negative or positive pressure to the thus opened aperture forces fluid materials via the flow tube into or out of the test tube. The plug includes means for positioning and holding the withdrawn flow tube section exteriorly of the test tube.

3,705,019
AGGLOMERATION OF CYANURIC ACID
Raymond N. Mesiah, Somerset, William F. Beck, Princeton Junction, and David Goldstein, East Brunswick, N.J., assignors to FMC Corporation, New York, N.Y.
Continuation-in-part of abandoned application Ser. No. 886,676, Dec. 19, 1969. This application May 11, 1971, Ser. No. 142,374
Int. Cl. A01n *9/22*; B01j *2/14*; C07d *55/36*
U.S. Cl. 23—313 **9 Claims**



This invention relates to the agglomeration of powdered cyanuric acid to produce larger particles which are free-flowing and which dissolve more easily in water than does the powder. The cyanuric acid particles are wetted and contacted; this causes the particles to agglomerate into larger particles which are then dried.

3,705,020
METALS HAVING IMPROVED MACHINABILITY AND METHOD
Elliot S. Nachtman, Evanston, Ill., assignor to LaSalle Steel Company, Hammond, Ind.
Filed Feb. 2, 1971, Ser. No. 111,916
Int. Cl. B32f *7/00*
U.S. Cl. 29—182.8 **16 Claims**

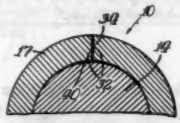
The improvement in machinability of steels and other metals by the inclusion of foreign bodies having a predetermined size and distribution within the metal.

3,705,021
REINFORCED METAL FIBRIL MATS AND METHODS OF MAKING SAME
Bertil J. Sundberg, Minneapolis, Minn., and Andreas Laksch, deceased, late of Deephaven, Minn., by David R. Johnson, executor, Minneapolis, Minn., assignors to Brunswick Corporation
Original application Aug. 24, 1964, Ser. No. 391,708, now Patent No. 3,505,038, dated Apr. 7, 1970. Divided and this application Aug. 27, 1969, Ser. No. 853,548
Int. Cl. B22f *7/04*
U.S. Cl. 29—182.3 **35 Claims**

A randomly oriented metal fibril mass is air laid and bound on at least one surface by a metal reinforcement. The porosity or density of the fibril mass may be preselected as desired. The fibrils in the mass and the fibrils adjacent the reinforcement can be attached at their contact points to strengthen the composite. A flat or tubular filter can be fashioned from the reinforcement.

The general method for making the reinforced fibril mass utilizes techniques which provide for, among other things, graded densities.

3,705,022
METALLIC COMPOSITE SHEATHED ELEMENT
Thomas C. Stout, Concord, Mass., and Andrew J. Kaiser, Muskegon, Mich., assignors to Brunswick Corporation
Original application June 13, 1968, Ser. No. 736,649, now Patent No. 3,562,899. Divided and this application Sept. 10, 1970, Ser. No. 71,122
Int. Cl. B21f *17/00*
U.S. Cl. 29—191.6 **2 Claims**



An apparatus for forming clad wire wherein the wire is surrounded by a strip of sheathing material deformed about the wire with the edges thereof being at least partially secured with the securing means not attaching the sheathing material to the wire. The product is of a metallic composite comprising a metal core and a metal sheath surrounding the core with the adjacent edges of the sheath defining a semi-continuous longitudinal seam.

3,705,023
ALUMINUM-STEEL COMPOSITES
Julius C. Fister, Jr., Hamden, Conn., assignor to Olin Corporation
No Drawing. Filed Dec. 18, 1970, Ser. No. 99,672
Int. Cl. B23p *3/00*
U.S. Cl. 29—196.2 **5 Claims**

Composites of aluminum and steel are disclosed which are resistant to intermetallic formation. The composites are characterized by the aluminum component containing from 0.5 to 2.5% silicon and the steel component containing free or soluble nitrogen in an amount from 0.001

to 0.05%. The composite results in a synergistic system exhibiting remarkable resistance to intermetallic formation when the composite is annealed.

3,705,024

FUEL DISTRIBUTION IN A GASOLINE ENGINE

Abraham A. Zimmerman, New Providence, Louis E. Furlong, Westfield, and Hugh F. Shannon, Scotch Plains, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed June 30, 1971, Ser. No. 158,639
Int. Cl. C10l *1/22*
U.S. Cl. 44—72 **5 Claims**

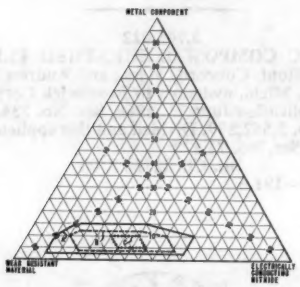
A tertiary diamine having one long aliphatic hydrocarbon group and one short alkyl group attached to each nitrogen atom of the diamine, when added in minor proportion to a gasoline, will improve the distribution of the air/fuel mixture in the intake manifold of a multicylinder gasoline engine that is run with the resulting blend thereby increasing operating efficiency. A representative diamine is dimethyl dioctadecyl ethylene diamine.

3,705,025

CUTTING TOOL

Alma U. Daniels, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Original application Nov. 18, 1968, Ser. No. 776,741, now Patent No. 3,502,447, dated Mar. 24, 1970. Divided and this application Jan. 19, 1970, Ser. No. 8,153
Int. Cl. B24d *3/02*
U.S. Cl. 51—309 **2 Claims**



A cutting tool having a cutting edge comprising dense homogeneous compositions having an average grain size less than about 10 microns is disclosed. The compositions comprise:

(1) 30–87% by vol. of alumina, aluminum nitride, zirconia, or mixtures thereof;

(2) 10–60% by vol. of a nitride of titanium, tantalum, zirconium, hafnium, niobium, or mixtures thereof; and

(3) 3–15% by vol. of a metal component having:

(A) 50%–80% by vol. of tungsten, molybdenum, or mixtures thereof; and

(B) 20–50% by vol. of nickel, iron, cobalt, or mixtures thereof.

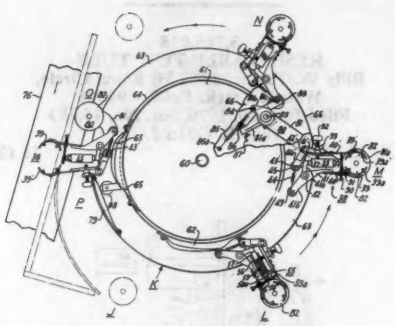
3,705,026

GLASSWARE DIMPLING

James C. McReynolds and William E. Adams, Sapulpa, Okla., assignors to Bartlett-Collins Company, Sapulpa, Okla.

Filed Oct. 15, 1970, Ser. No. 80,992
Int. Cl. C03f *9/00*
U.S. Cl. 65—232 **13 Claims**

Tumblers and the like articles are produced from vitreous, plastic and similar materials by a continuous step by step production method, wherein each article may be first preliminarily formed as a parison and then blow-formed as a blank or semi-finished article. While the blank is still hot or semi-plastic, dimples or depressions are formed in its side and bottom walls to produce an indented or dimpled type of shape. Side wall dimpling is accomplished



by providing transfer finger pairs with pressure nubbins and preliminarily employing the fingers as clamping pressers; a bottom end dimple is produced by providing a bottom closure plate of a vacuum head assembly with a centrally disposed nubbin and applying suction force to draw the article up into the head.

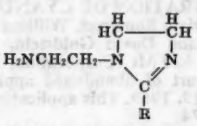
3,705,027

MICROBIOCIDAL NAPHTHENYL IMIDAZOLINES

Phillip Adams, Murray Hill, and Alfonso N. Petrocci, Glen Rock, N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

No Drawing. Filed Dec. 9, 1969, Ser. No. 883,641
Int. Cl. A01n *9/22*
U.S. Cl. 71—67 **3 Claims**

The use of 1-aminoethyl-2-naphthenyl imidazoline, having the structure:



wherein R is the residue of a naphthene-carboxylic acid as a microbiocidal preservative agent.

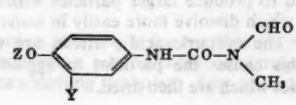
3,705,028

USE OF ARYLUREAS IN COMBATING WEEDS IN COTTON PLANTATIONS

Stefan Janiak, Basel, and Otto Rohr, Therwil, Switzerland, assignors to Ciba-Geigy AG

No Drawing. Filed Jan. 26, 1970, Ser. No. 5,951
Claims priority, application Switzerland, Feb. 6, 1969, 1,821/69
Int. Cl. A01n *9/20*
U.S. Cl. 71—120 **8 Claims**

The use in combating weeds in cotton plantations of compounds of the formula



(I)

in which Z represents a C_1–C_4 alkyl radical, a C_2–C_4 alkenyl radical or a C_2–C_4 alkinyl radical and Y stands for a fluorine, chlorine, bromine or iodine atom or a trifluoromethyl radical.

3,705,029
DISPERSING SODIUM WITHIN MOLTEN ALUMINUM
George S. Foerster, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Jan. 6, 1971, Ser. No. 104,475
Int. Cl. C22c *1/02*
U.S. Cl. 75—138 **11 Claims**

A method of dispersing sodium into molten aluminum. A sodium-containing, essentially insoluble heavy metal is introduced into molten aluminum at a temperature exceeding the melting temperature of the sodium-containing heavy metal. The sodium diffuses from the heavy metal into the aluminum to maintain a desired level of sodium in the aluminum for an extended period. A solidified shaped article having a modified silicon structure can be cast from the sodiumized aluminum.

3,705,030
FOAMED METAL
Currie B. Berry, Jr., and Robert J. Fanning, Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.
No Drawing. Filed Oct. 30, 1970, Ser. No. 85,783
Int. Cl. B22d *25/00, 25/06*
U.S. Cl. 75—20 F **5 Claims**

A process for strengthening a foamed metal or foamed metal alloy with a metal oxide formed in situ by melting the metal or metal alloy, mixing an oxygen containing agent into the metal or metal alloy, and foaming the metal or metal alloy.

3,705,031
CHLORINE AND BROMINE CONTAINING POLY-9-VINYLCARBAZOLE ELECTROPHOTOGRAPHIC POLYMERS
Kikuo Kinjo, Tokyo, Teruo Yamanouchi, Fujisawa, and Eiichi Kondo, Hiroshi Matsuno, and Katsuhiko Nishide, Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Ota-ku, Tokyo, Japan
No Drawing. Filed July 15, 1970, Ser. No. 55,215
Claims priority, application Japan, July 18, 1969, 44/56.806
Int. Cl. G03g *5/00*
U.S. Cl. 96—1.5 **18 Claims**

An electrophotographic photosensitive material comprises a polymer containing a chlorine and bromine substituted 9-vinylcarbazole unit.

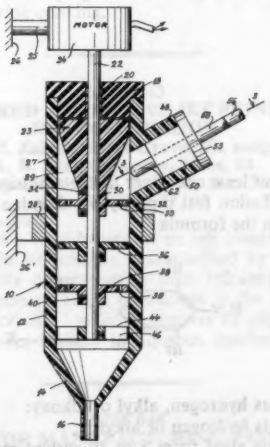
3,705,032
ELECTROPHOTOGRAPHIC MATERIALS
Satoru Honjo, Masaaki Takimoto, Seiji Matsumoto, and Kuniko Kosuge, Asaka-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara-shi, Kanagawa, Japan
Filed Aug. 20, 1969, Ser. No. 851,562
Claims priority, application Japan, Aug. 20, 1968, 43/59,400
Int. Cl. G03g *5/08*
U.S. Cl. 96—1.8 **11 Claims**

An electrophotographic material having an electrophotographic layer formed of a finely divided inorganic photoconductor, one or more spectral sensitizing dyes and an insulating film forming material comprising an alkyd resin cured with a polyisocyanate compound. The above is coated on a support, and the alkyd resin contains 10 to 50% by weight of an aromatic dibasic carboxylic acid and has a hydroxyl value within the range 10 to 100. The polyisocyanate compound is contained in an amount from about 1.2 to 8 times the equivalent amount corresponding to the hydroxyl value of the alkyd resin.

3,705,033
PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC IMAGES
Erwin Ranz, Leverkusen, Edith Weyde, Kurten, and Harald von Rintelen, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Apr. 20, 1970, Ser. No. 30,343
Claims priority, application Germany, Apr. 26, 1969, P 19 21 361.7
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 R **4 Claims**

Positive photographic images consisting of a silver image and a vesicular image superimposed on the silver image are produced by imagewise exposure of a supported light-sensitive silver salt emulsion layer, photographic development in the presence of silver salt solvents while in contact with an image receiving layer, whereby the silver salt from the unexposed and undeveloped areas of the light-sensitive silver salt emulsion layer is transferred to the image receiving layer and reduced to form a silver image therein and treatment of the image receiving layer containing the said silver image with a compound which is decomposed by the image silver to form the vesicular image in accordance with the silver image.

3,705,034
PROCESS AND APPARATUS FOR PRODUCING IMPROVED PHOTOGRAPHIC EMULSION
Robert A. McNamara, 87 Main St., Newton, N.J. 07860
Filed June 10, 1968, Ser. No. 735,793
Int. Cl. G03c *1/02*
U.S. Cl. 96—94 **5 Claims**



The disclosure describes a continuous flow cylindrical precipitation reactor having a lateral opening through which reactants are introduced from two adjacent orifices. In the reactor are rotating apertured disk agitators which

stir the reactants to form an emulsion. The emulsion flows axially through the reactor, and leaves the reactor at its open bottom. The process involves use of active gelatin, gold sensitization, and immediate combining of input flow streams of reactants just prior to agitation.

3,705,035

DIFFUSION-FAST COLOR-FORMING DEVELOPING AGENTS

Hans Vetter, Justus Danhauser, Karlheinz Kabitzke, Paul Marx, Arnfried Melzer, and Willibald Pelz, Cologne, and Walter Puschel, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

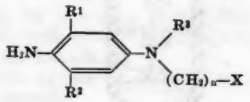
No Drawing. Filed June 5, 1970, Ser. No. 43,939

Claims priority, application Germany, June 19, 1969, P 19 31 057.7

Int. Cl. G03c *7/00, 1/06, 1/48*

U.S. Cl. 96—55 **4 Claims**

Photographic images are obtained by developing an imagewise exposed light-sensitive photographic material comprising at least one silver halide emulsion layer, which contains diffusion fast p-phenylene diamine type developing agents in the formula



wherein

R^1 represents hydrogen, alkyl or alkoxy;
R^2 represents hydrogen or alkyl;
R^3 represents alkyl from 8 to 20 carbon atoms;
X represents hydrogen, sulfo, carboxyl, hydroxyl or sulfonamide, and
n represents 1 to 4.

Preferably are produced colored images, using material which contains in the same layer as the diffusion fast developer a color-forming coupler or a dye-giving compound which on reaction with developed oxidation products releases a diffusible dye. The development is preferably carried out in the presence of a pyrazolidone-3 compound.

3,705,036

COLOR PHOTOGRAPHIC PROCESS TO PREVENT DISCOLORATION BY ULTRAVIOLET LIGHT

Hiroyuki Amano, Reiichi Ohi, and Kazuo Shirasu, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Continuation of abandoned application Ser. No. 707,481, Feb. 23, 1968. This application Mar. 16, 1971, Ser. No. 124,936

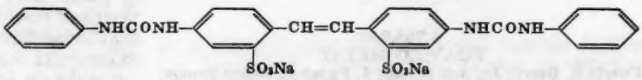
Claims priority, application Japan, Feb. 23, 1967, 42/11,670

Int. Cl. G03c *7/00*

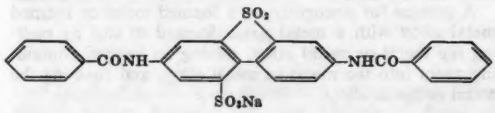
U.S. Cl. 96—56 **13 Claims**

A method of processing a color photographic light sensitive material which comprises contacting it, after exposure and development, with a processing solution containing at least one ultra-violet absorbent selected from the group consisting of

Compound 1

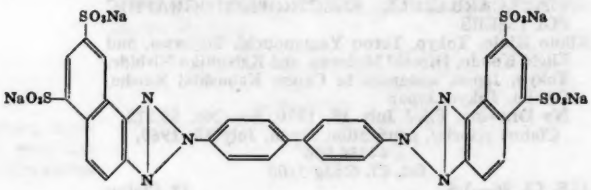


Compound 2



and

Compound 3



3,705,037

PHOTOCHROMIC COMPOSITION CONTAINING A BLEACHED-OUT DYE AND A REDUCING AGENT THEREFOR

Eiichi Inoue and Toshihiro Yamase, Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Mar. 20, 1970, Ser. No. 21,541

Claims priority, application Japan, Mar. 25, 1969, 44/22,577

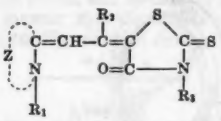
Int. Cl. G03c *1/72*

U.S. Cl. 96—89 **30 Claims**

A photosensitive composition comprises a photocolor developing and eliminating coloring matter and a reducing medium capable of reducing the photocolor developing and eliminating coloring matter under irradiation of a visible light. The reducing medium may be a reducing material such as reducing solvent and reducing solid matter and a reducing organic compound.

3,705,038
SPECTRAL SENSITIZATION OF SILVER HALIDE LIPPMANN EMULSIONS
Herman Adelbert Philippaerts, Mortsel, Theofiel Hubert Ghys, Kontich, and Henri Depoorter, Mortsel, Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium
No Drawing. Filed Oct. 7, 1970, Ser. No. 78,936
Claims priority, application Great Britain, Jan. 20, 1970, 2,769/70
Int. Cl. G03c 1/22
U.S. Cl. 96—140 10 Claims

Photographic silver halide emulsions of the Lippmann-type are described which comprise as a spectral sensitizer a merocyanine dye of the formula:



wherein:

Z represents the atoms necessary to close a pyrroline nucleus or a tetrazole nucleus,

R_2 represents hydrogen, an aliphatic group or an aryl group, and

each of R_1 and R_3 stands for an aliphatic group or an aryl group, one of R_1 and R_3 comprising a sulpho group, a carboxy group, a sulphato group, a phosphone group or a sulphamoyl or sulphonyl-carbamoyl group.

These dyes have an excellent sensitizing action in the green region of the spectrum and can be used in high concentrations without leaving residual stain in the emulsion after processing and without producing fog.

3,705,039
LOW CALORIE SWEETENER MIXTURE OF MALTITOL AND MALTOTRIITOL
Masakazu Mitsuhashi, Mamoru Hirao, and Kaname Sugimoto, Okayama, Japan, assignors to Hayashibara Company, Okayama-shi, Okayama, Japan
No Drawing. Filed July 10, 1970, Ser. No. 53,993
Claims priority, application Japan, July 13, 1969, 44/55,306
Int. Cl. A23l 1/26
U.S. Cl. 99—28 11 Claims

Liquefied starch solution is subjected to the action of an alpha-1,6-glucosidase and saccharified. The resulting linear chained mixed saccharification product is hydrogenated to produce a non-digestive linear chained sweetener mixture of maltitol and maltotriitol. The sweetener mixture is added to various foods and drinks.

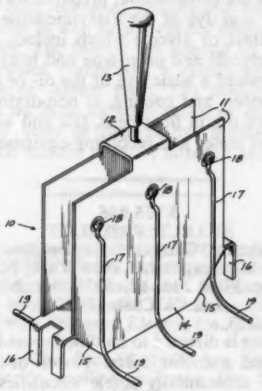
3,705,040
PROCESS OF EXTRACTING MEAT FROM CRUSTACEANS PARTICULARLY SHRIMP
Peter W. Bynagte, San Diego, Calif., assignor to Westgate-California Foods, Inc.
No Drawing. Filed Oct. 19, 1970, Ser. No. 82,096
Int. Cl. A22c 29/00
U.S. Cl. 99—111 4 Claims

The process of extracting the meat from crustaceans, particularly shrimp, wherein the shrimp are dipped into a solution of water, sodium acid pyrophosphate or calcium acid pyrophosphate and sodium tripolyphosphate or sodium metaphosphate or sodium hexametaphosphate or sodium trimetaphosphate or sodium orthophosphate for a period of at least two minutes during which time the solution is agitated, and then cooked for at least two minutes and then cooled and peeled.

3,705,041
INTERNALLY TREATED PLASTIC FOOD CONTAINERS
Wilhelm E. Walles, Otis R. McIntire, James K. Rieke, and Max V. Griggs, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Apr. 1, 1969, Ser. No. 812,299
Int. Cl. B65b 25/22
U.S. Cl. 99—171 LP 9 Claims

Food containers of non-aromatic plastic films having their internal surfaces suitably sulfonated and neutralized are disclosed as being useful to package raw or precooked oleaginous foods since the foods can be heated in the package to cook it or warm it for serving without rupture of the package.

3,705,042
TACO SHELL JIG
Kenneth K. Muse, Star Rte., Worland, Wyo. 82401
Filed Dec. 10, 1971, Ser. No. 206,685
Int. Cl. A23p 1/00
U.S. Cl. 99—426 1 Claim



A device for shaping and holding a tortilla in taco shell form during cooking.

3,705,043
INFRARED ABSORPTIVE JET PRINTING INK COMPOSITION
Daniel M. Zabiak, River Grove, Ill., assignor to A. B. Dick Company, Niles, Ill.
No Drawing. Filed Dec. 7, 1970, Ser. No. 95,951
Int. Cl. C09d 11/02
U.S. Cl. 106—20 4 Claims

This invention is addressed to an ink composition suitable for use in jet printing characterized by high infrared absorptivity comprising a high infrared absorbing coloring component and a humectant in the form of an aliphatic polyol, alkyl ether derivatives of aliphatic polyols and mixtures thereof in aqueous medium.

3,705,044
METHOD FOR MANUFACTURING PAINTS AND INKS, AND PRODUCT PRODUCED THEREBY
David D. Pipkins, Downers Grove, Ill., assignor to The Valspar Corporation, Minneapolis, Minn.
Filed Oct. 15, 1970, Ser. No. 80,833
Int. Cl. C09d 11/00, 11/02, 11/16
U.S. Cl. 106—20 4 Claims

The apparatus includes a storage tank for solvents, a ball mill, and a tinting tank. Carbon dioxide supply lines

are connected to each of these. Addition of carbon dioxide under pressure to the storage tank precarbonates the organic solvent and provides a carbonated product when milled with a pigment. The carbon dioxide can be added at the mill either alone, or in combination with precarbonation. Solvents or diluents are added in the tinting tank and the resulting product is a carbonated paint or ink which has improved anti-skinning characteristics. The storage tank arrangement reduces emissions of organic solvents into the atmosphere. The use of carbon dioxide reduces flammability in the system, of the product, and during subsequent use. Improved conductivity of the carbonated solvent also results.

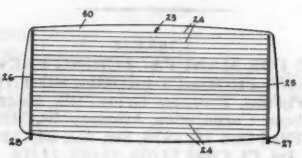
3,705,045
INK MARKING COMPOSITIONS
Francis Joseph Nadolski, Piscataway, N.J., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Nov. 12, 1970, Ser. No. 89,066
Int. Cl. C09d *11/00*
U.S. Cl. 106—22 **8 Claims**

An ink marking composition, prepared by adding a hot solution of an acid dye of the triarylmethane or azo class in a specific class of glycols which include di-, tri- and tetraethylene glycols and propylene and hexylene glycols, to a hot solution of a basic dye of the di- or tri-arylmethane class in water, and cooling, is non-drying, bleedfast, and suitable for use in fiber pens, felt and wick markers, stamp pads and meter and recording equipment.

3,705,046
STARCH PRODUCT
Edwin L. Speakman, Clinton, Iowa, assignor to Standard Brands Incorporated, New York, N.Y.
No Drawing. Filed Jan. 18, 1971, Ser. No. 107,510
Int. Cl. C08b *27/22*
U.S. Cl. 106—213 **20 Claims**

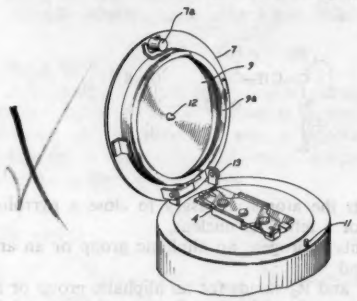
The disclosure is directed to modified cross-linked starch products in the granular form. Pastes of these starch products have substantially stable viscosities at elevated temperatures and dry films of the products are more soluble than films prepared from untreated starch. Also, pastes of the modified cross-linked starch products are substantially-retrogradable. The modified cross-linked starch product is a partially depolymerized formaldehyde cross-linked starch product having a 60-minute Brabender viscosity of from about 70 to about 125 percent of the peak viscosity and a gel strength of less than 140 gm.-cm. Said product is prepared by treating starch granules with formaldehyde and partially depolymerizing the cross-linked starch granules.

3,705,047
METHOD OF REPAIRING ELECTRICALLY CONDUCTING FRIT CIRCUITS
James G. Marriott, Perrysburg, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio
Filed May 23, 1969, Ser. No. 827,263
Int. Cl. B22d *19/10*; B23p *3/00*; B41m *3/08*
U.S. Cl. 117—2 **3 Claims**



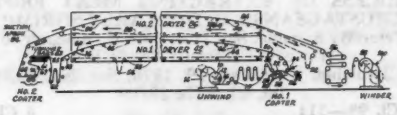
Methods of repairing or restoring electrical heating circuits composed of electrically conducting metal containing frit lines fired on a vitreous substrate, which lines contain cracks or discontinuities therein that render such lines nonconductive.

3,705,048
CLINICAL SPINNER
John J. J. Staunton, Oak Park, Ill., assignor to The Perkin-Elmer Corporation
Filed Nov. 6, 1970, Ser. No. 87,524
Int. Cl. B44d *1/02*
U.S. Cl. 117—3 **7 Claims**



An improved method and apparatus for preparing blood and similar samples for microscopic examination in which the sample is deposited on a slide and the slide is spun at high speed to throw off the excess liquid and leave a thin smear or film. The sample is shielded from air currents by means of a cover which fits over the rotating holder to which the sample slide is clamped. By shielding the sample it is protected from air buffeting which prevents distortion of the blood cells and obviates diagnostic errors due to change in cell shape. After the cells spread in a uniform layer, it is important to arrest rotation of the slide to prevent excess drying of the smear, which also results in distortion of the cell shape.

3,705,049
METHOD FOR THE MANUFACTURE OF DOUBLE COATED SHEETS WITH PRESSURE-RUPTURABLE MATERIALS
Thomas W. Busch, Appleton, Wis., assignor to Appleton Papers, Inc., Appleton, Wis.
Filed Aug. 31, 1970, Ser. No. 68,417
The portion of the term of the patent subsequent to Oct. 20, 1987, has been disclaimed
Int. Cl. B41m *5/16*
U.S. Cl. 117—36.9 **2 Claims**



Tandem coating of paper web on one side first with a coating of pressure-rupturable encapsulated materials and then with a coating of clay overlaying the coating of pressure-rupturable materials, wherein each coating, while wet with the coating composition, is doctored to meter the coating composition and to uniformly distribute the coating composition over the surface of the web.

3,705,050

GLASS ARTICLE HAVING ROUGHENED, ENAMEL SURFACE AND METHOD FOR FORMING SAME

Allison L. Smith, Vineland, N.J., assignor to Owens-Illinois, Inc.

No Drawing. Original application Jan. 6, 1966, Ser. No. 518,997, now Patent No. 3,544,508, dated Dec. 1, 1970. Divided and this application Apr. 9, 1970, Ser. No. 27,165

Int. Cl. C03c *17/00*

U.S. Cl. 117—46 FA 12 Claims

A glass article having a roughened or matte finish marking area on its surface consisting essentially of a vitreous enamel and to a process for producing such a marking area on a surface of a glass article, which area may subsequently be marked with indicia by a suitable instrument, such as a graphite pencil, and be capable of retaining the indicia in such manner that the indicia will not be susceptible to being readily removed during normal handling of the surface.

3,705,051

METAL PLATING PROCESS

Paul Kobetz, Warren E. Becker, and Albert P. Giraitis, Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 705,016, Feb. 13, 1968. This application Dec. 10, 1970, Ser. No. 96,989

Int. Cl. B44d *1/02*

U.S. Cl. 117—47 H 19 Claims

A process for applying an aluminum plate on a wide variety of materials to produce articles having desirable qualities exemplified by good corrosion resistance. A first embodiment of the invention is characterized by contacting the substrate to be coated with a solution containing a suitable catalyst and a trihydrocarbylamine complex of aluminum hydride at relatively low temperatures, i.e., below 150° C. Decomposition of the complex is effected by catalysts and aluminum plating occurs on the exposed surfaces of the substrate. In a second process embodiment the substrate is coated with a catalyst and subsequently brought into contact with a solvent containing a dissolved aluminum hydride-trihydrocarbylamine complex to effect the desired aluminum deposition. The process of this invention provides a highly useful and novel method of plating substantially any material with a uniform, strongly adherent aluminum coating of desired thickness.

3,705,052

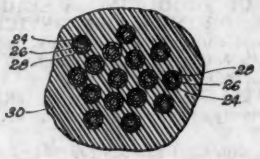
GLASS FIBER REINFORCED ELASTOMERS

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation

Filed Dec. 16, 1970, Ser. No. 98,641

Int. Cl. C03c *25/02*

U.S. Cl. 117—72 42 Claims



This invention is addressed to a method for enhancing the bonding relationship of glass fibers to elastomeric materials when the glass fibers are combined with elastomeric materials in the manufacture of glass fiber-reinforced elastomer products wherein glass fibers are first treated to provide a metal oxide on the surfaces thereof, and are thereafter treated to provide a thin coating of a xanthate or a carbamate on the glass fiber surfaces with the result that they may be combined directly with the elastomeric materials, or they may be treated in the form of a bundle with an elastomer compatible impregnant.

3,705,053

HIGHLY ABSORBENT BONDED NONWOVEN FABRICS

William D. Emmons, Huntingdon Valley, Vincent J. Moser, Abington, John G. Brodnyan, Langhorne, and Norman Shachat, Levittown, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Apr. 16, 1971, Ser. No. 134,904

Int. Cl. D6n *3/04;* B32b *27/12*

U.S. Cl. 117—140 A 4 Claims

The present invention is concerned with new and improved binders for the production of nonwoven fabrics which have a high degree of absorbency, and retain their bonded character as well as absorbency through numerous wash-dry cycles. The fabrics are bonded by a novel self-crosslinking binder comprising a copolymer of (a) N-methylolamine or -amide units, (b) sulfonic acid units which contain no basic nitrogen atoms or group, and (c) certain acrylic units of neutral but mildly hydrophilic character which contain no basic nitrogen atoms or group.

3,705,054

METHOD OF APPLYING COATINGS OF TIN OXIDE UPON SUBSTRATES

Toru Matsushita, Yokohama-shi, Kunimoto Suzuki, Tokyo, and Shoji Hasegawa, Yokohama-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

No Drawing. Filed Jan. 18, 1968, Ser. No. 698,688

Claims priority, application Japan, Jan. 25, 1967, 42/4,540

Int. Cl. C03c *17/22*

U.S. Cl. 117—211 1 Claim

An organic stannous compound in which divalent tin is bonded to organic radicals by the aid of oxygen such as stannous alkoxide or stannous acyl compound represented by a general formula $Sn(OR)_2$ or $Sn(OOCR)_2$ (R in the formulas represents an alkyl radical) is applied upon a substrate and then the applied coating is pyrolyzed.

3,705,055

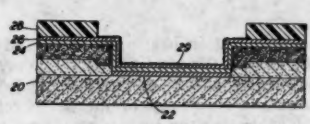
METHOD OF DESCUMMING PHOTORESIST PATTERNS

Gary Lee Christensen and Donald Henry Gittelman, Reading, Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Sept. 18, 1970, Ser. No. 73,486

Int. Cl. B44d *1/18;* B08b *7/00*

U.S. Cl. 117—212 1 Claim



Residual portions of photoresist are removed from areas of a pattern which are to be free of photoresist. The removal or "descumming" is accomplished by subjecting

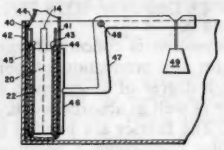
substrates with patterned coatings of photoresist to an oxidizing medium, such as oxygen plasma, for a brief period. The residual photoresist or "scum" is removed while the desired photoresist is reduced in thickness. The time of oxidation is limited so that the desired photoresist is not made excessively thin.

3,705,056

METHOD FOR PRODUCING AND OPERATING A FUEL CELL

Henry P. Doble, Jr., and Harry C. Langelan, Silver Spring, Md., assignors to Decktronic, Inc., Washington, D.C.

Filed Jan. 28, 1969, Ser. No. 794,675
Int. Cl. H01m *13/04, 27/04*
U.S. Cl. 136—86 E 8 Claims



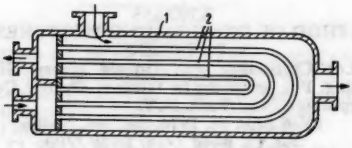
The invention contemplates a fuel cell having a porous electrode forming the septum between the reducing and oxidizing gas chambers, the electrode comprising a grid pasted with a simple metallic compound such as ferrous oxalate which has been electrolytically reduced while under controlled mechanical pressure to produce a relatively specific, high porosity of extreme surface area.

3,705,057

METHOD FOR TREATING HEAT EXCHANGERS AND SIMILAR APPARATUS IN THERMAL POWER PLANTS

Fritz Kelp, Erlangen, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

Filed June 9, 1971, Ser. No. 151,261
Claims priority, application Germany, June 13, 1970, P 20 29 249.3
Int. Cl. F28f *19/02*
U.S. Cl. 148—6.35 4 Claims



A method of treating heat exchangers and like apparatus used in thermal power plants for applying a protective magnetite layer to the surface of iron or steel tubes or other wall portions of the heat exchanger has the steps of subjecting the surface to a flow of steam at a temperature above 220° C. in the absence of air and simultaneously, during the time the protective layer is applied, subjecting the tube to a pressure differential corresponding approximately to the pressure differential to which the tube is subjected in actual use.

3,705,058

SOFT-NITRIDING PROCEDURE FOR STEEL AND CAST IRON

Zoltan Kolozsvari and Endre Gal, Targu-Mures, Rumania, assignors to Fabrica de Utilaje si Piese de Schimb "Metalotehnica," Targu-Mures, Rumania

No Drawing. Filed July 7, 1971, Ser. No. 160,523
Claims priority, application Rumania, July 9, 1970, 63,864
Int. Cl. C23c *11/16, 11/18*
U.S. Cl. 148—16.6 1 Claim

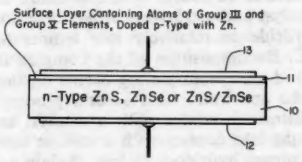
A method of increasing the nitrogen content of steel and cast iron wherein the body is maintained in an atmosphere of ammonia, methane and oxygen in a molar ratio of $CH_4:NH_3=1$ and $(CH_4+NH_3):O_2=25–30$ while maintaining the dissociation rate of the ammonia between 38 and 40%. The treatment time is 1 to 10 hours at a temperature of 570° C. ±10° C.

3,705,059

METHODS OF PRODUCING P-TYPENESS AND P-N JUNCTIONS IN WIDE BAND GAP SEMICONDUCTOR MATERIALS

Zoltan K. Kun, Skokie, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Continuation-in-part of abandoned application Ser. No. 819,960, Apr. 28, 1969. This application Feb. 25, 1971, Ser. No. 118,744
Int. Cl. H01l *7/36, 5/00;* C23c *13/00*
U.S. Cl. 148—175 15 Claims



To produce a p-conductivity type wide band gap semiconductor material, a III–V compound semiconductor layer is first vacuum evaporated onto and then diffused into a crystalline II–VI compound semiconductor substrate, specifically a zinc chalcogenide. The resulting hybrid crystalline material is doped by simultaneous or sequential infusion of zinc atoms in substitution for atoms of the Group III element. The process may be used for the direct production of p-n junctions in zinc chalogenides by employing an n-type rather than an intrinsic substrate.

3,705,060

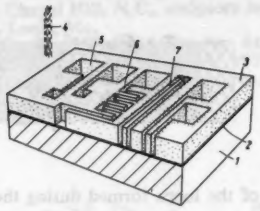
METHOD OF PRODUCING A SEMICONDUCTOR OR THICK FILM DEVICE

Fritz Stork, Grossgartach, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm-Donau, Germany

Filed Dec. 1, 1969, Ser. No. 881,150
Claims priority, application Germany, Dec. 2, 1968, P 18 12 130.7
Int. Cl. B32b *31/14;* B44c *1/22*
U.S. Cl. 156—3 14 Claims

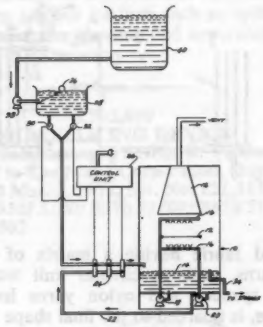
A method of producing a semiconductor or thick film device comprises forming a layer of etching resistant, temperature resistant and light insensitive plastics material on a carrier body, such as an insulating material or semiconductor body and removing predetermined areas of the plastics layer by means of a controlled electron

beam. The areas of the carrier body from which the plastics material has been removed can be used for the



removal of further material, depositing further material or the introduction of further material.

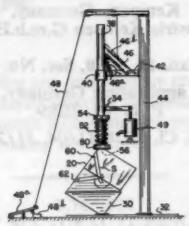
3,705,061
CONTINUOUS REDOX PROCESS FOR DISSOLVING COPPER
Edwin B. King, Hitchcock, Tex., assignor to Southern California Chemical Co., Inc., Santa Fe Springs, Calif.
Filed Mar. 19, 1971, Ser. No. 126,141
Int. Cl. C23g *1/36, 3/00*
U.S. Cl. 156—19 **8 Claims**



There is provided a continuous regenerative redox system for dissolving copper from substrates. An alkaline etch solution containing cupric ions as the oxidizer is used to oxidize and thereby dissolve copper with attendant reduction of the cupric ions to the cuprous state. A portion of the etch solution is continuously removed from the system. A source of oxygen and an ammonia based replenishing solution are added to reconstitute the alkaline etch solution. The replenishing solution requirements of the system are determined by continuously monitoring the specific gravity of the etch solution and pH with respect to ammonium content.

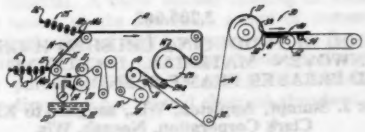
3,705,062
METHOD OF ASSEMBLING A COLLAPSIBLE, REUSEABLE CONTAINER UTILIZING AN INVERTED THREE SIDED PYRAMIDAL SHAPED TROUGH SUPPORT FIXTURE
George R. Johnson, Chagrin Falls, Ohio, assignor to The Arpax Company, Chagrin Falls, Ohio
Continuation-in-part of application Ser. No. 779,425, Nov. 27, 1968, now Patent No. 3,599,822. This application Nov. 27, 1970, Ser. No. 93,110
Int. Cl. B29c *27/18;* B65g *7/28*
U.S. Cl. 156—69 **6 Claims**

A method of assembling a collapsible reuseable container for shipping, storage or the like comprised of separate defining side, end and top and bottom panels, comprising utilizing an inverted three sided pyramidal shaped trough fixture and assembling the side, end and bottom panels in the support trough, with the bottom panel facing generally upwardly, applying pressure sensitive tape sections or strips to the bottom panel adjacent opposite corner portions thereof, and in manner whereby the strips extend diagonally across the respective side and end panels and into wrap-around relation with the respective opposite side and end panels to secure the panels together, and then rotating the assembled panels 90° in the fixture to



provide positioning of the container for application of the strips or the tape sections to the bottom panel adjacent the other corner portions thereof, whereby the panels are strongly secured together. The assembled container is then placed upright, ready to receive stock material therein. The cover or top panel can then be applied to the filled container and secured to the remainder of the container by tape sections applied adjacent the corners of the top panel and extending diagonally into adhering engagement with the adjacent side and end panels.

3,705,063
METHOD OF PRODUCING HIGH-LOFT, NONWOVEN PANELING MATERIAL AND COVERING
Robert J. Stumpf, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Oct. 5, 1970, Ser. No. 78,004
Int. Cl. D04h *11/00*
U.S. Cl. 156—72 **14 Claims**



A paneling material comprising a laminated construction having a layer of adhesive and a multiplicity of elements looped outwardly from the layer and a layer of nonflexible material, such as plywood, plastic, or the like, laminated to the adhesive layer; and a method of making the paneling material by first embedding a web of elements in an open pattern of adhesive, bonding the elements in the adhesive, consolidating the adhesive into a continuous backing layer while loop.ng the elements outwardly from the adhesive backing, and laminating the nonflexible material to the adhesive backing. In

certain instances, a second pattern of adhesive may be applied to the first pattern of adhesive prior to the consolidation step. Also a barrier layer may be interposed between the nonflexible material and the adhesive backing. Also, the invention includes a new use for a high-loft nonwoven material, namely: as a wall covering material.

3,705,064

PROCESS FOR THE MANUFACTURE OF VARICOLORED, ORNAMENTALLY DESIGNED NEEDLED NON-WOVEN FABRICS

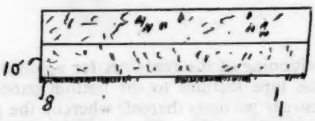
Herbert Lochner, Kempen, Germany, assignor to Cik-Chemische Industrie Kempen G.m.b.H., Kempen, Germany

Filed Jan. 14, 1970, Ser. No. 2,976

Claims priority, application Germany, Jan. 15, 1969, P 19 01 753.9

Int. Cl. B32b *31/04, 31/20*

U.S. Cl. 156—72 7 Claims



A process for manufacturing varicolored, ornamentally designed needled non-woven fabrics which comprises applying to a first web of a needled, single-colored or blended non-woven fabric, a second web of non-woven fabric of a different color contrasting from the color of the first fabric, said second web having been glued and dried in accordance with a desired pattern, attaching the two webs to one another by a needling operation in such a manner that the areas free of glue of said second web are passed through by needles whereby fibers of said fabric are taken along and will appear at the rear face of the first web of non-woven fabric forming a finished pile thereon, while at the glued areas only a partial connection of the two fabric webs is effected by needling without the fibers being passed through to the rear face of said first web.

3,705.065

METHOD OF PRODUCING CRUSHED HIGH-LOFT, NONWOVEN MATERIAL, INCLUDING CARD AND BREAKER FRAME BLENDING

Robert J. Stumpf, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 5, 1970, Ser. No. 78,005

Int. Cl. D04h *11/00*

U.S. Cl. 156—72 16 Claims

A high-loft, nonwoven fabric with a substantially continuous backing layer of adhesive and a multiplicity of fibers looped outwardly from the backing, with the fiber loops being at least partially crushed; and a method of making the fabric by first embedding a web of fibers in an open pattern of adhesive and then consolidating the adhesive into a substantially continuous backing layer while looping the fibers outwardly from the backing and thereafter reactivating the adhesive backing and crushing the loops. Variation of the appearance and color of the fabric may be achieved by blending fibers of various colors prior to, and during the forming of fiber slivers used in producing the fiber web, as well as varying the amount

of crushing of the loops formed during the consolidation step.

3,705,066

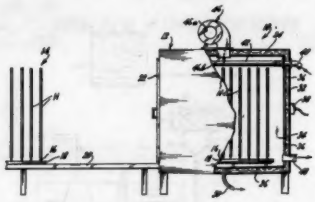
METHOD OF SIMULTANEOUSLY BOARDING AND SETTING KNITTED HOSIERY

William E. Aldrich, Cranston, R.I., assignor to Warnaco Inc., Bridgeport, Conn.

Filed Aug. 17, 1970, Ser. No. 64,422

Int. Cl. D04b *39/00*

U.S. Cl. 156—148 11 Claims



A knitted fabric having a matrix of interconnected spandex yarns, such as circular knit women's hosiery, containing spandex and nylon yarns having interconnected loops, is boarded to the final shape for the hosiery and made non-run without affecting any of the other properties of the fabric or hosiery by being placed under tension and subjected to superheated steam at a temperature in the range of 340° F. to 380° F. for a time sufficient to fuse the interconnected loops of the spandex yarn and to set the hosiery in its final shape.

3,705,067

METHOD OF PREPARING REINFORCED SHEETING MATERIAL BASED ON CHLORINATED OLEFIN POLYMERS

Richard B. Ammons, 11065 East Vieux, Baton Rouge, La. 70815

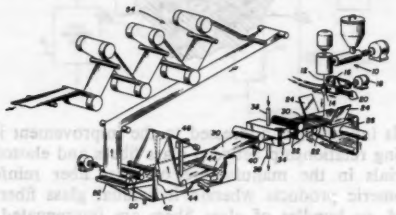
No Drawing. Continuation of abandoned application Ser. 832,443, June 11, 1969, and a continuation-in-part of abandoned applications Ser. No. 467,081 and Ser. No. 467,096, both June 25, 1965. This application Aug. 10, 1970, Ser. No. 62,622

Int. Cl. B32b *7/04;* C09j *5/00*

U.S. Cl. 156—324 1 Claim

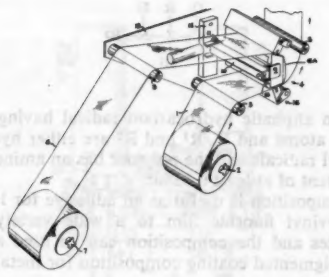
This invention is directed to flexible multicomponent laminate structures for use as flashing and the like, consisting of one or more film layers and a fabric layer wherein the film layer is prepared from a flexible essentially non-crystalline sheet of a chlorinated ethylene polymer of designated properties and wherein the fabric layer is an inherently polar woven fiber reinforcing mat.

3,705,068
PROCESS AND APPARATUS FOR PRODUCING NONWOVEN FABRICS
Emerick J. Dobo, Cary, and Dong W. Kim and William C. Mallonee, Chapel Hill, N.C., assignors to Monsanto Company, St. Louis, Mo.
Original application June 16, 1967, Ser. No. 646,720, now Patent No. 3,542,615, dated Nov. 24, 1970. Divided and this application Nov. 21, 1969, Ser. No. 877,557
Int. Cl. D04h *1/04*
U.S. Cl. 156—441 4 Claims



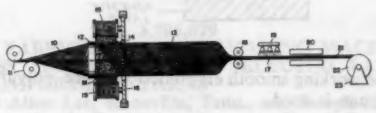
A process for producing self-bonded nonwoven fabrics from polyamides in a continuous operation employing an activating gaseous medium such as hydrogen chloride gas to promote the bonding and apparatus for carrying the process to completion.

3,705,069
FILM SPLICING DEVICE
Ernest Elrod, Jonesboro, and Arthur B. Viescas, Decatur, Ga., assignors to The Mead Corporation, Dayton, Ohio
Filed Mar. 5, 1971, Ser. No. 121,313
Int. Cl. B31f *5/00*; B37b *31/08*; B65h *21/00*
U.S. Cl. 156—502 8 Claims



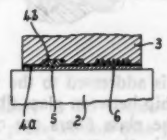
A reserve film strip is arranged with its leading end wrapped partially about a fixed mandrel and clamped thereto. A strip of supply film is fed to a point of use and immediately alongside the mandrel and adjacent the clamped leading end of the reserve roll and means for bonding the leading end of the reserve strip to the trailing end of the supply strip is disposed adjacent the mandrel and comprises a pressure bar for urging the strips together and an elongated heater element which both seals the adjacent ends of the two rolls together and severs the surplus ends. The bonding means including the pressure bar and heater element are sequentially urged into engagement with the juxtaposed strips by suitable motive means such as a fluid motor.

3,705,070
NONWOVEN FABRIC AND PROCESS FOR PREPARING
Charles W. Kim, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
Filed July 22, 1969, Ser. No. 843,561
Int. Cl. D04h *3/14*
U.S. Cl. 161—58 15 Claims



Nonwoven fabrics are prepared by crosslaying an open network of fibril-interconnected substantially parallel continuous monofilaments with a similar network at an angle of 20–89° and bonding the same.

3,705,071
METHOD OF MANUFACTURING THIN COMPOUND MATERIALS, NOTABLY FOR SHOEMAKING
Elie Gras, Thonon, France, assignor to Etablissements Anver S.A., Paris, France
Filed July 22, 1970, Ser. No. 57,170
Int. Cl. B29c *5/12, 27/04*; B32b *27/30*
U.S. Cl. 161—116 9 Claims

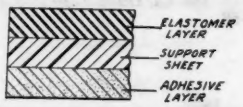


A method for the manufacture of relatively thin pieces useful in the making of components for shoes, morocco articles and other similar articles. A mold is prepared by casting the article in a mold of silicone containing material which has low dielectric losses. A sheet of absorbent material such as PVC foam is impregnated with a pasty or pulverulent plastic material of the same chemical nature as said sheet and having a high coefficient of dielectric losses. On or below said plastic-impregnated sheet is disposed a supporting sheet of leather, textile or other suitable material. A close mutual bonding of these elements is insure by the combined action of compression and the application of high frequency currents for gelling and melting the plastic materials of said sheet and said pasty or pulverulent plastic material, thus causing the complete disappearance of said sheet of absorbent material.

3,705,072
UNDERPACKING FOR PRINTING WITH DIMENSIONALLY STABLE PLASTIC CORE HAVING ELASTOMERIC AND PRESSURE SENSITIVE OUTER LAYERS
Donald M. Rosvold, South St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 4, 1970, Ser. No. 34,601
Int. Cl. B32b *27/06, 27/32, 27/40*
U.S. Cl. 161—167 2 Claims

A novel underpacking comprising a support sheet having a shear resistant layer affixed to its upper and lower faces with at least the top layer providing a low tack

release surface said support sheet being selected from cellulose acetate triacetate and polyethylene terephthalate.



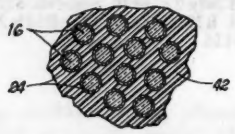
For the working smooth elastomeric surface, polyurethane or silicone is used.

3,705,073

GLASS FIBER BUNDLE COMPRISING AN ELASTOMER COMPATIBLE IMPREGNANT AND A THICKENING AGENT

Alfred Marzocchi, Cumberland, and Nicholas S. Janetos, East Providence, R.I., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 26, 1970, Ser. No. 40,622
Int. Cl. C03c *25/02;* B32b *17/04, 17/10*
U.S. Cl. 161—176 5 Claims



This invention is addressed to the improvement in the bonding relationship between glass fibers and elastomeric materials when the glass fibers are combined with elastomeric materials in the manufacture of glass fiber-reinforced elastomeric products wherein individual glass fibers are sized, or a bundle of glass fibers is impregnated with an elastomer compatible material which has been rendered thixotropic by the addition thereto of a thickening agent.

3,705,074

HIGH BULK YARN FORMABLE MIXTURES OF LINEAR POLYMERIC THERMOPLASTIC MATERIALS

George E. R. Lamb, Mendham, Dusan C. Prevorsek, Morristown, Abraham M. Kotliar, Westfield, and Hendrikus J. Oswald, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 779,310, Nov. 20, 1968. This application May 21, 1971, Ser. No. 146,434
Int. Cl. D02g *3/06*
U.S. Cl. 161—172 4 Claims

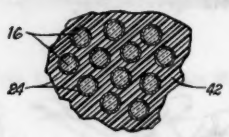
The invention contemplates the preparation of fibrillated yarns or strands having high bulk and good tactile properties from a unitary structure, e.g. monofilaments. The monofils, tapes, films and the like hereafter referred to as a monofil are extruded from polymer mixtures consisting of (A) a low molecular weight polyester and (B) one or more of the following polymers; (i) a fiber forming polyamide, (ii) a fiber forming polyester and (iii) a fiber forming polyolefin in blends or mixtures whose composition is capable of producing suitable fibers. The splitting of the monofil into a relatively high bulk structure containing many fibrils is effected by suitable mechanical working which breaks or fissures the monofil into separate fibrils.

3,705,075

GLASS FIBER REINFORCED ELASTOMERS

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 16, 1970, Ser. No. 98,813
Int. Cl. C03c *25/02;* B32b *17/04*
U.S. Cl. 161—176 20 Claims



This invention is addressed to the improvement in the bonding relationship between glass fibers and elastomeric materials in the manufacture of glass fiber reinforced elastomeric products wherein individual glass fibers are coated, or bundles of glass fibers are impregnated with a composition including as a glass fiber anchoring agent, a resorcinol silicon compound or a resorcinolato chromic complex.

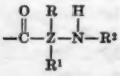
3,705,076

ADHESIVE COMPOSITION AND LAMINATING PROCESS

Hugo R. Usala, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 218,103, Aug. 20, 1962. This application May 17, 1966, Ser. No. 550,627
Int. Cl. B32b *27/08, 27/30*
U.S. Cl. 161—189 39 Claims

A composition of an organic solvent solution of an aminoester modified vinyl addition polymer, of at least two ethylenically unsaturated copolymerizable monomers, such as methyl methacrylate and methacrylic acid, having attached to the carbon-carbon chain monovalent radicals of the formula



wherein

Z is an aliphatic hydrocarbon radical having 2–3 carbon atoms and R, R^1 and R^2 are either hydrogen or alkyl radicals and the polymer has an amino nitrogen content of at least 0.01%;

the composition is useful as an adhesive for laminating polyvinyl fluoride film to a wide variety of substrates and the composition can be used as a clear or pigmented coating composition for metal or wood substrates.

3,705,077

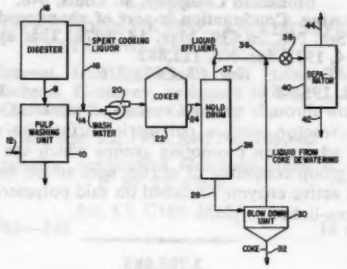
WASTE DISPOSAL PROCESS FOR SPENT WOOD-PULPING LIQUORS

William F. Franz, Gardiner, Howard V. Hess, Glenham, and Edward L. Cole, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Oct. 9, 1970, Ser. No. 79,385
Int. Cl. D21c *11/00*
U.S. Cl. 162—30 6 Claims

Wash water and digester liquor from a wood pulping operation are heated at a temperature in the range of 450° F. to 700° F. under autogeneous pressures of about 1000 to about 3000 p.s.i.g. for a period of 0.5 minute to 6 hours to form coke and a purified effluent. The coke is separated from the effluent and dewatered. Liquid from this dewatering step is combined with the effluent and

depressured to flash vaporize and concentrate the combined stream to a soluble chemicals concentration suitable for reconstitution and recycle to the pulping operation. Coke produced in the process may be burned as plant

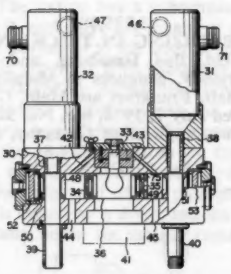


fuel and the ash recovered and worked for chemical values. The liquid stream is reconstituted for pulping purposes by the addition thereto of pulping chemicals derived, in part, by burning the coke produced in the process.

3,705,078
REGULATING PULP CONCENTRATION IN PAPER MANUFACTURING

Yoshimi Shinohara, 493–2 Kuzawa, Fuji-shi, Shizuoka-ken, Japan

Filed Sept. 8, 1970, Ser. No. 70,423
Claims priority, application Japan, Sept. 6, 1969, 44/70,465
Int. Cl. D21f *1/06, 1/08*
U.S. Cl. 162—198 10 Claims

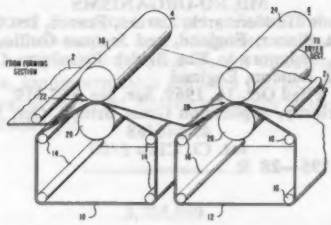


The regulation of pulp concentration in the manufacture of paper. A carrier liquid is continuously recirculated and carries the pulp from which the paper is manufactured. A replenishing liquid is added to the carrier liquid for replenishing the pulp thereof. A comparison is made between the carrier liquid before the replenishing liquid is added thereto and the carrier liquid after the replenishing liquid is added thereto. By way of this comparison, a detecting assembly detects the deviation, if any, of the relationship between the carrier liquid without replenishing liquid and the carrier liquid with replenishing liquid added thereto from a predetermined relationship therebetween. In accordance with the detected deviation, if any, an electrical signal is achieved for electrically adjusting a valve which controls the supply of replenishing liquid to the carrier liquid, and in this way the supply of replenishing liquid to carrier liquid is maintained at an extent which will maintain the predetermined relationship between the carrier liquid without replenishing liquid and the carrier liquid with replenishing liquid added thereto.

3,705,079
PRESS FABRIC FOR A PAPERMAKING MACHINE PRESS SECTION HAVING SELECTED LARGE INCOMPRESSIBLE YARNS

Charles Allen Lee, Knoxville, Tenn., and Joseph Robert Wagner, Leeds, England, assignors to Huyck Corporation, Stamford, Conn.

Original application Apr. 10, 1968, Ser. No. 727,125. Divided and this application Feb. 18, 1971, Ser. No. 116,659
Int. Cl. D21f *3/00*
U.S. Cl. 162—358 5 Claims



This invention relates to an improved papermakers' fabric for use in the press section of a papermaking machine and more specifically to a papermakers' fabric having a plurality of spaced, parallel, substantially incompressible grooves in at least one surface thereof, which provide void volume for water expressed from a paper web as it passes through the pressure nip of the press rolls in the machine.

3,705,080
METHOD FOR PRODUCING NICOTINAMIDE ADENINE DINUCLEOTIDE

Kiyoshi Nakayama, Sagamihara-shi, Japan, assignor to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

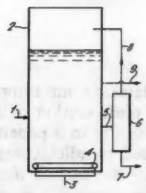
No Drawing. Continuation of application Ser. No. 658,316, Aug. 4, 1967. This application June 17, 1968, Ser. No. 737,314
Claims priority, application Japan, Aug. 8, 1966, 41/51,662
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 N 12 Claims

A process for producing nicotinamide adenine dinucleotide which comprises culturing a microorganism capable of producing nicotinamide adenine dinucleotide in an aqueous nutrient medium under aerobic conditions in the presence of at least one surface active agent. As a result of the addition of the surface active agent to the medium, the nicotinamide adenine dinucleotide accumulates in the culture liquor extracellularly. Exemplary preferred surface active agents include cetyl trimethyl ammonium bromide and cetyl pyridinium chloride, but many others—cationic, anionic, non-ionic and amphoteric—may be used. The surface active agent may be added to the medium either at the beginning or sometimes during culturing, either all at one time or intermittently.

3,705,081
METHOD FOR PRODUCING NICOTINAMIDE ADENINE DINUCLEOTIDE
Kiyoshi Nakayama, Sagamihara-shi, Japan, assignor to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
No Drawing. Continuation of application Ser. No. 656,687, July 28, 1967. This application June 13, 1968, Ser. No. 736,584
Claims priority, application Japan, July 29, 1966, 41/49,398
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 N 7 Claims

The present disclosure relates to a method for producing nicotinamide adenine dinucleotide in high yields which comprises culturing a microorganism capable of producing nicotinamide adenine dinucleotide in an aqueous nutrient medium under aerobic conditions in the presence of pantothenic acid, β-alanine or coenzyme A and mixtures thereof. Examples of microorganisms which can be used in the present process are those belonging to the genera Brevibacterium, Corynebacterium and Arthrobacter.

3,705,082
CULTIVATION AND RECOVERY OF MICRO-ORGANISMS
Jean Claude Hondermarck, Lavera, France, Ian Cameron Bennett, Pinner, England, and Jacques Guillo, Lavera, France, assignors to The British Petroleum Company Limited, London, England
Filed Oct. 16, 1969, Ser. No. 867,019
Claims priority, application Great Britain, Oct. 18, 1968, 49,546/68
Int. Cl. C12b *1/00*
U.S. Cl. 195—28 R 1 Claim



A method and apparatus for the cultivation of micro-organisms wherein the pumping efficiency of cultivated broth removed from the cultivation zone is improved by first subjecting the removed cultivated broth to a separation step wherein aerated broth is separated from partially de-aerated broth under the action of the density differential between aerated broth and partially de-aerated broth, and thereafter pumping partially de-aerated broth back to the cultivation zone. The process is particularly suited to fermentations having external heat exchange means and in which the cultivated broth is highly aerated.

3,705,083
PROCESS FOR PRODUCING COLLAGENASE
Angelo J. Chiulli, Hempstead, and Edwin H. Wegman, Freeport, N.Y., assignors to Agricultural Biologicals Corporation, Lynbrook, N.Y.
No Drawing. Filed July 8, 1966, Ser. No. 563,702
Int. Cl. C12d *13/10*; A61k *19/00*
U.S. Cl. 195—62 6 Claims

A non-flagellated, non-motile strain of *Clostridium histolyticum* (ATCC No. 21000), when fermented under conventional conditions for the growth of *Cl. histolyticum*, yields an elaboration product characterized by collagenase and proteolytic enzyme activity and inhibits the growth of microbes such as *Staphylococcus aureus* and organisms of the genus Clostridium. This collagenase may be employed in the form of a topical ointment for debridement of necrotic tissue or as an injectable solution to facilitate internal sloughing and readsorption of physiologically antagonistic tissue.

3,705,084
MACROPOROUS ENZYME REACTOR
John H. Reynolds, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of abandoned application Ser. No. 20,639, Mar. 18, 1970. This application Feb. 4, 1971, Ser. No. 112,802
Int. Cl. C07g *7/02*
U.S. Cl. 195—63 30 Claims

A flow-through enzyme reactor comprising a macroporous reactor core; a polymeric surface on said core having adsorption promoting groups which are members of the group consisting of nitrilo, acid amido and ureido; and an active enzyme adsorbed on said polymeric surface and cross-linked in place.

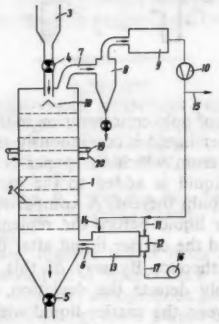
3,705,085
METHOD FOR EXTRACTING AND SEPARATING ENZYMES
Jacques Guy Pelluet, Nesle, France, assignor to Societe Anonyme: Les Produits Organiques du Santerre Orsan, Paris, France
No Drawing. Filed July 24, 1970, Ser. No. 58,164
Claims priority, application France, Sept. 23, 1969, 6932369; Jan. 27, 1970, 7002833
Int. Cl. C12d *13/10*; C07g *7/028*
U.S. Cl. 195—66 R 5 Claims

A method for preparing an active enzyme powder from a culture of *Bacillus subtilis* which comprises the steps of:

(a) precipitating the enzyme from a nutrient broth of the purified culture by means of sodium sulphate,
(b) vacuum-filtering the resulting flocculate on a filter having a pre-treated filter bed using calcium sulphate dihydrate as a filtration adjuvant, and
(c) scraping a surface layer off the filter bed to obtain the dry product having a degree of activity determined by the thickness of the layer.

The powder may be used in detergent compositions.

3,705,086
COAL CARBONIZING IN TRICKLING STREAMS
Paul Schmalfeld, Bad Homburg, and Helmut Hahn, Hanau, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany
Filed July 7, 1970, Ser. No. 52,900
Claims priority, application Germany, July 11, 1969, P 19 35 214.8
Int. Cl. C10b *47/20*
U.S. Cl. 201—34 8 Claims



Fine-grained coke is produced by a carbonization of fine-grained coal by a treatment with a hot gas. The coal

trickles down in a countercurrent to the rising hot gas past fixtures which retard the free fall and occupy up to 50% of the cross-section of flow. The coal may in that way be made suitable for use in making briquettes.

3,705,087

COKE OVEN DOOR HAVING AN ADJUSTABLE LEVELLING BAR OPENING

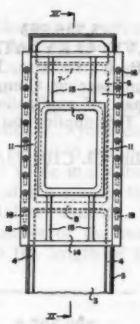
Walter Grumm, Hattingen-Ruhr, and Heinz Thubeauville, Bochum, Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Germany

Filed Apr. 22, 1971, Ser. No. 136,442

Claims priority, application Germany, June 4, 1970, P 20 27 376.1

Int. Cl. C10b *25/06*

U.S. Cl. 202—248 10 Claims



An upright door for an end of the horizontal chamber of a coke oven is provided in its upper part with an opening for a bar by which coal in the oven is levelled. A tubular casing is disposed in this opening and is adjustable vertically in it. The casing has a substantially horizontal passage through it, and there are means at opposite sides of the casing for bolting it to the door at different levels. The oven door is provided with substantially horizontal transverse walls extending outwardly above and below the casing and spaced therefrom. At the outer side of the door there are means closing the outer ends of the spaces between the top and bottom of the casing and transverse walls, and these spaces are filled with refractory material. The outer end of the passage through the casing normally is closed by a door, and the oven door is lined with refractory below the tubular casing.

3,705,088

CARBON DIOXIDE SENSOR

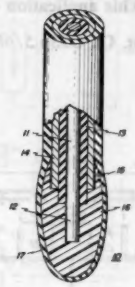
Leonard W. Niedrach and Willard T. Grubb, Schenectady, N.Y., assignors to General Electric Company

Filed Oct. 16, 1970, Ser. No. 81,314

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 P 6 Claims

A carbon dioxide sensor has an elongated flexible current collector with an exterior surface of palladium on at least one end, an electrochemically active region of palladium oxide in electrical contact with a portion of the palladium surface of the current collector, a second elongated flexible current collector surrounding at least partially the first current collector, a second electrochemically active region of silver and silver halide in electrical contact with the second current collector, a first layer of electrical insulation disposed between the first and second current collectors, a second layer of electrical insulation



disposed over the second current collector, an anion exchange resin electrolyte contacting both electrochemically active regions, and an outer sheath of carbon dioxide permeable, ion-impermeable diffusion barrier material encapsulating at least the electrochemically active regions and the electrolyte.

3,705,089

REFERENCE ELECTRODE HALF CELL

Willard T. Grubb, Schenectady, N.Y., assignor to General Electric Company

Filed Sept. 28, 1970, Ser. No. 75,866

Int. Cl. G01n *27/30*

U.S. Cl. 204—195 F 5 Claims

A reference electrode half cell has an elongated, flexible electrically insulated tube having opposite open ends, a silver wire positioned partially within the tube at one end thereof and extending outwardly from the one end, the tube bonded to the silver wire at the one end, a coating of silver chloride on a portion of the silver wire positioned within the tube, and at least one gelled equitransferent salt solution filling the tube in contact with the silver chloride coating on the silver wire and in contact with the opposite open end of the tube.

3,705,090

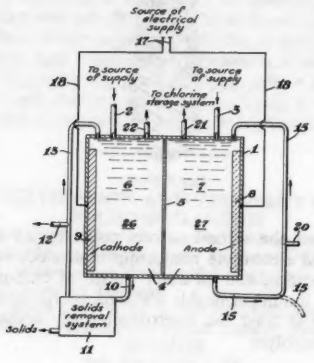
NOVEL ELECTROLYTIC CELL AND METHOD FOR PRODUCING CHLORINE AND METAL HYDROXIDES

Grafton L. Bergeron and James J. Leddy, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 796,249, Sept. 16, 1968. This application Oct. 1, 1970, Ser. No. 77,292

Int. Cl. C23b *5/68*

U.S. Cl. 204—266 **5 Claims**



A novel electrolytic cell for producing both chlorine and alkaline earth hydroxides simultaneously, in which brine supply means are connected to each of the anode and cathode chambers.

3,705,091

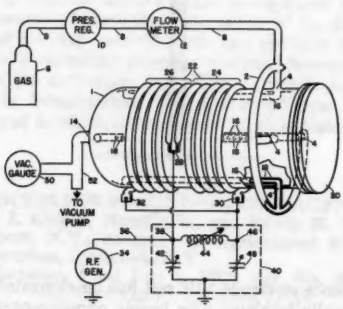
GAS DISCHARGE APPARATUS

Adir Jacob, West Roxbury, Mass., assignor to LFE Corporation, Waltham, Mass.

Filed Oct. 5, 1971, Ser. No. 186,739

Int. Cl. B01k *1/00*

U.S. Cl. 204—312 **4 Claims**



The admission of a gas to a reaction chamber which has been previously evacuated, is followed by its activation via a high-frequency electromagnetic field formed by a composite coil surrounding a material-handling zone within the chamber. The activated gas reacts with material introduced into the chamber and is thereafter withdrawn, along with inactive gas and resultant gaseous by-products, from the system. The construction of the chamber and the composite coil are such as to provide a substantially uniform distribution of gaseous excited species throughout the material-handling volume of the chamber.

3,705,092

SOLVENT EXTRACTION OF COAL BY A HEAVY OIL

John G. Gatsis, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Dec. 18, 1970, Ser. No. 99,704

Int. Cl. C10g *1/04*

U.S. Cl. 208—8 **6 Claims**

A solid carbonaceous material, such as coal, is converted to liquid products and the asphaltene content of a heavy hydrocarbonaceous liquid is reduced in a process wherein the solid is solvent extracted by the liquid and the resultant mixture of liquids is recovered as the product.

3,705,093

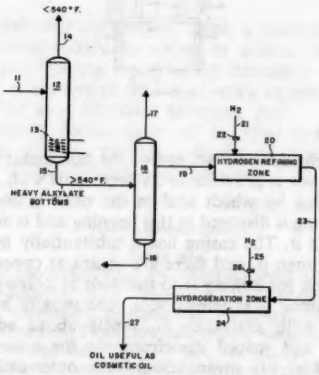
REFINED HEAVY ALKYLATE BOTTOMS OIL

Thomas L. Ashcraft, Jr., Bellaire, Tex., assignor to Esso Research and Engineering Company, Linden, N.J.

Continuation-in-part of application Ser. No. 11,606, Feb. 16, 1970. This application June 14, 1971, Ser. No. 153,119

Int. Cl. C10g *23/00*

U.S. Cl. 208—14 **17 Claims**



A colorless and odorless specialty oil having a viscosity within the range from about 75 SSU to about 3000 SSU at 100° F., a viscosity index within the range from about 0 to about −200, and an aromatics content comparable to that of white oils is prepared by hydrogen refining and then hydrogenating a heavy alkylate bottoms oil of approximately the same viscosity and viscosity index which has a boiling range within the limits from about 540° F. to about 800° F. The heavy alkylate oil contains at least about 90 weight percent saturated hydrocarbons, which are about 50 to 70 weight percent naphthenes, the remainder being isoparaffins. These saturated molecules have highly branched side chains which are characterized by a high "branchiness ratio" of from about 2.6 to about 3.9. The naphthenes are predominantly polycyclic and have a bicyclic ratio of from about 0.4 to about 0.8. Hydrogen refining of the heavy alkylate oil is carried out in the presence of a sulfur-insensitive catalyst at a temperature from about 400° F. to about 700° F. under a hydrogen pressure from about 150 to about 2000 p.s.i.g.

using a hydrogen-treat rate from about 100 to about 1000 s.c.f./bbl. at a liquid hourly space velocity from about 0.1 to about 10. Hydrogenation of the hydrogen-refined heavy alkylate oil occurs in a hydrogenation zone over a Group VIII metal hydrogenation catalyst at temperatures from about 300° F. to about 650° F., a hydrogen pressure from about 300 to about 3000 p.s.i.g., a liquid hourly space velocity from about 0.1 to about 3.0 v./v./hr., and a hydrogen-treat rate from about 300 to about 2500 s.c.f./bbl. The hydrogenated oil is useful as a unique cosmetic base oil.

3,705,094

SERIAL REFORMING WITH PLATINUM-RHENIUM AND PLATINUM-NON RHENIUM CATALYSTS

Carl D. Keith, Summit, and William C. Pfefferle, Middletown, N.J. (both of 497 Delancy St., Newark, N.J. 07105)

No Drawing. Filed Mar. 20, 1970, Ser. No. 21,515
Claims priority, application Canada, Oct. 14, 1969, 064,811
Int. Cl. C10g *35/08, 39/00*
U.S. Cl. 208—65 **10 Claims**

The disclosure is directed to systems for the catalytic reforming of gasoline boiling range hydrocarbons to improve their octane rating. Reforming is conducted in the presence of molecular hydrogen and platinum group metal-type catalysts disposed in a plurality of fixed bed reaction zones. In an initial dehydrogenation reaction zone the catalyst contains a platinum group metal and rhenium on an alumina support while in a subsequent paraffin dehydrocyclization part of the system the catalyst contains a platinum group metal on alumina. In a special operation the inlet temperatures of the reactors can be controlled with respect to the length of the total reforming cycle.

3,705,095

PLURAL STAGE PLATINUM CATALYST REFORMING WITH RHENIUM IN THE LAST STAGE

Milton H. Dalson, Carl D. Keith, and William C. Pfefferle, all % Engelhard Minerals & Chemicals Corp., 497 Delancy St., Newark, N.J. 07105, and John Mooi, % Atlantic Richfield Company, 400 E. Sibley Blvd., Harvey, Ill. 60426

No Drawing. Filed Mar. 20, 1970, Ser. No. 21,549
Claims priority, application Canada, July 3, 1969, 58,402/69
Int. Cl. C10g *35/08, 39/00*
U.S. Cl. 208—65 **19 Claims**

A process for reforming naphthene and paraffin-containing hydrocarbon feeds to increase their aromatic content is disclosed which involves the use of a series of catalytic reaction zones of which one of the first contains an alumina-supported, platinum group metal-containing catalyst which is substantially devoid of rhenium and which serves to dehydrogenate naphthenes, and one of the last of which zones contains an alumina-supported, platinum group metal and rhenium-containing catalyst which serves to dehydrocyclize paraffins.

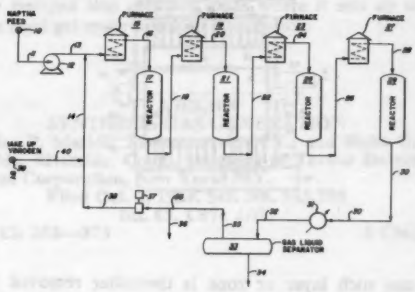
3,705,096

DUAL-ZONE AND DUAL-CATALYST REFORMING PROCESS

David A. McCaulay, Homewood, Albert L. Hensley, Jr., Munster, and John A. Mahoney, Griffith, Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed Oct. 30, 1970, Ser. No. 85,688
Int. Cl. C10g *39/00*
U.S. Cl. 208—65 **30 Claims**

A petroleum hydrocarbon fraction is contacted in a first reforming zone with a first catalyst comprising a Group VIII noble metal, a halide, and alumina to produce a first reformate, which is subsequently contacted in a second reforming zone with a second catalyst comprising the oxides of chromium, a member selected from the group consisting of an oxide of an alkali metal, an oxide of an alkaline earth metal, and mixtures thereof, and



alumina. The second catalyst may contain also a small amount of rhenium. The first reformate should possess a paraffins-to-naphthenes ratio of at least 5 to 1.

3,705,097

PROCESS AND CATALYST FOR REDUCING SULFUR IN HYDROCARBONS

Billy D. Head, Angelton, Edward A. Fraini, Lake Jackson, and George R. Martin, Freeport, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Jan. 28, 1971, Ser. No. 110,670
Int. Cl. C10g *23/04*
U.S. Cl. 208—217 **10 Claims**

A crude feedstock containing sulfur impurities is desulfurized i.e. reduced in sulfur content, by reacting the feedstock with excess hydrogen over a fluidized catalyst comprising magnesium oxide and a Group VIII metal oxide on a refractory support wherein the Group VIII metal content is in the range from 1–10 percent and the magnesium content is in the range from 5–25 percent both based on the total weight of catalyst.

3,705,098

SEWAGE TREATMENT WITH HYDROGEN PEROXIDE

John Alexander Shepherd, Princeton, N.J., and Millice Floyd Hobbs, Monte Sereno, Calif., assignors to FMC Corporation, New York, N.Y.

No Drawing. Filed Feb. 22, 1971, Ser. No. 117,737
Int. Cl. C02c *1/40*
U.S. Cl. 210—63 **3 Claims**

In the treatment of sewage to remove odors and reduce corrosion in sewerage and treatment plants, sulfide and hydrogen sulfide are removed by oxidation with hydrogen peroxide.

3,705,099

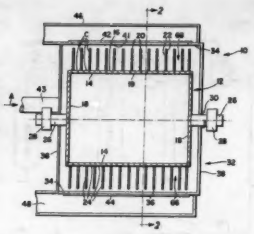
SEPARATING MEANS AND METHOD

Allen Bruce Hunter, Dollard des Ormeaux, Quebec, Canada, assignor to Environmental Purification Systems, Inc., Marblehead, Mass.

Filed May 18, 1970, Ser. No. 38,171
Claims priority, application British Provisional, June 16, 1969, 30,312
Int. Cl. B01d *43/00*
U.S. Cl. 210—65 **14 Claims**

A method and apparatus are disclosed for separating the unlike components of a fluid mixture of unlike materials by contacting the mixture with surface means, providing relative motion between the mixture and the surface means, which motion exerts a force on the mixture parallel to the surface means, thus forming layers

or zones having a reduced concentration of at least one material component of the fluid mixture. At least a part



of one such layer or zone is thereafter removed from the mixture.

3,705,100

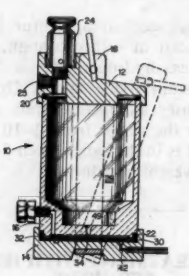
BLOOD FRACTIONATING PROCESS AND APPARATUS FOR CARRYING OUT SAME

William F. Blatt, Framingham, Edward A. Agranat, Weston, and Peter N. Rigopulos, Melrose, Mass., assignors to Amicon Corporation, Lexington, Mass.

Continuation-in-part of applications Ser. No. 828,935, May 29, 1969, and Ser. No. 833,090, June 13, 1969. This application Aug. 25, 1970, Ser. No. 66,675

Int. Cl. B01d *13/00*

U.S. Cl. 210—23 **8 Claims**



A process for separating blood plasma from whole blood that dispenses with the known centrifugal-separation techniques and involves passing whole blood along a flow path which is shallow and substantially parallel to the upstream side of filtration membrane, recovering plasma from the downstream side of said membrane, and recovering the retained blood components (formed elements) from the upstream side of the membrane.

3,705,101

NEUTRON-ABSORBING MATERIAL AND METHOD OF MANUFACTURE

Paul Blum, Saint-Genis-Laval, Jacques Lefrancois, Fontenay-aux-Roses, and Louis Vinarnick, Gif-sur-Yvette, France, assignors to Commissariat a l'Energie Atomique, Paris, and Societe Lyonnaise de Plomberie Industrielle, Lyon, France

Filed Mar. 27, 1968, Ser. No. 716,380

Claims priority, application France, June 14, 1967, 110,431

Int. Cl. G21c *7/24*

U.S. Cl. 252—478 **5 Claims**

The neutron-absorbing material essentially comprises between 32 and 40% by weight of polyethylene, between 17 and 20% by weight of water, between 37 and 45% by weight of gypsum and approximately 1% of boron.

The method of preparation of the material consists in incorporating in the dry state the boron compound with the gypsum in suitable proportions, in adding the mixture of boron compound and gypsum to the mixing water in which a retarder of set may have been dissolved, in homogenizing the mixture, in incorporating polyethylene granules with the mixture, in pouring the resulting paste into a container and in tamping the poured paste.

3,705,102

COMPOSITION AND METHOD OF DEFOAMING BUBBLE BATHS

Rolf Mast, Park Forest, Ill., assignor to Armour-Dial, Inc., Chicago, Ill.

No Drawing. Filed Jan. 18, 1971, Ser. No. 107,556

Int. Cl. C11d *1/12*

U.S. Cl. 252—89 **7 Claims**

A bath composition comprising a high-foaming detergent and an encapsulated combination of an emollient, a fatty polyoxyethylene material having a hydrophilic-lipophilic balance (HLB) of 10–12 and a methylpolysiloxane defoaming agent is disclosed. In use, the detergent provides copious foam and, after a delay in time, the encapsulated materials are released to simultaneously break the foam produced by the detergent and provide an emollient for the skin of the user.

3,705,103

STAIN-REMOVING SOLID CLEANSERS

Bernard Cohen, Trenton, N.J., assignor to FMC Corporation, New York, N.Y.

No Drawing. Filed Dec. 31, 1970, Ser. No. 103,287

Int. Cl. C11d *7/54*

U.S. Cl. 252—100 **5 Claims**

Solid cleaners for nonmetallic surfaces such as ceramic and "Formica," which can be used to remove stains from such surfaces, are made with the oxidizing constituent thereof being a water-soluble peroxydiphosphate, the cleaner yielding a pH in water of not over 2.5.

3,705,104

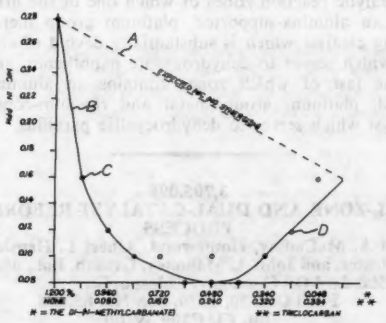
SYNERGISTIC ANTISEPTIC COMPOSITIONS

David Taber, 2000 Lincoln, Evanston, Ill. 62242, and Leo A. Raphaelian, 2640 Laurel Lane, Wilmette, Ill. 60091

Filed July 20, 1970, Ser. No. 56,270

Int. Cl. C11d *9/50*

U.S. Cl. 252—107 **6 Claims**



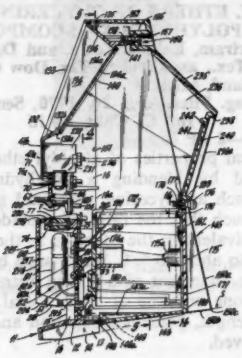
Compositions possessing antibacterial activity through the effect of synergistic mixtures of 2,2'-methylene-bis-(3,4,6-trichlorophenol)-di-(N-methylcarbamate), triclocarban and 4,4'-dichloro-3-trifluoromethyl carbanilide.

3,705,105

MOVING PICTURE FILM VIEWER EDITOR

Eugene Martinez, Irvington-on-Hudson, N.Y., assignor of a fractional part interest to Robert H. Reible, Croton-on-Hudson, N.Y.

Filed June 21, 1971, Ser. No. 154,858
Int. Cl. G03b 21/00
U.S. Cl. 352—129 32 Claims



Idler gears isolate film loop and preserve the integrity of the isolated film loop. Film image locating means are movable in order to index the image on the screen properly. The projection lamp cover or housing is also the "on/off" switch and film guide for the idler gears. The front portion of the housing contains the positioning devices for the condenser lens assembly, the lamp, the focusing lens, two of the mirrors of the optical system and the screen. The rear portion of the housing contains positioning devices for the third mirror of the optical system and the battery storage compartment. The battery storage compartment is so designed that the pickup contacts for electrical current are on the front portion of the housing while all other contacts are on the rear portion of the housing and on the battery compartment cover, thereby eliminating the need for electrical interlock wiring between both halves of the housing.

3,705,106

NONOXIDIZING ACIDIC COMPOSITIONS CONTAINING ROSIN AMINE AND ACETYLENIC CORROSION INHIBITORS

Thaddeus M. Muzyczko, Melrose Park, Samuel Shore, Roselle, and Jerome A. Martin, Chicago, Ill., assignors to The Richardson Company, Melrose Park, Ill.

No Drawing. Original application Mar. 21, 1968, Ser. No. 714,771, now Patent No. 3,632,524. Divided and this application Feb. 8, 1971, Ser. No. 113,648
Int. Cl. C23f 11/04, 11/14; C23g 1/06
U.S. Cl. 252—148 8 Claims

Corrosion inhibiting compositions for use with aqueous systems and based on a combination of a rosin amine, ethoxylated rosin amine, ethyloctynol, and propargyl alcohol. The compositions include both mixtures and reaction products thereof.

3,705,107

OIL BASE GEL HAVING LOW VISCOSITY BEFORE GELATION AND METHOD OF PRODUCING SAME

Raymond W. Hoeppel, P.O. Box 997, Oak View, Calif. 93022

No Drawing. Filed Nov. 6, 1970, Ser. No. 87,649
Int. Cl. B01j 13/00; H01b 3/02
U.S. Cl. 252—316 3 Claims

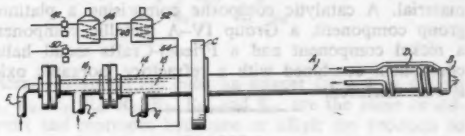
A thixotropic oil base gel having a low dielectric constant and high electrical resistivity is produced by agitating together in oil an alkali metal soap of a disproportionated rosin acid, a calcium base and an oil dispersible hydroxy hydrocarbon surfactant selected from a group comprising phenols and alcohols. Because of retarded gelation, the resultant fluid is low in viscosity and can be easily pumped into confined areas where it sets up to a stable rigid gel upon cessation of agitation.

3,705,108

SYNTHESIS GAS GENERATION

Charles P. Marion, Mamaroneck, N.Y., and Blake Reynolds, Riverside, Conn., assignors to Texaco Development Corporation, New York, N.Y.

Filed Oct. 6, 1969, Ser. No. 863,784
Int. Cl. C07c 1/02
U.S. Cl. 252—373 5 Claims



Synthesis gas is generated by reacting a finely divided preatomized liquid oil suspended in steam or other moderator, with high purity molecular oxygen. The problem of burner deterioration is overcome by using a triple orifice burner in which the oxygen is conveyed thru a central orifice, the preatomized oil/steam phase is passed thru an outer annular orifice coaxially about the oxygen orifice and separated therefrom by a third stream of steam or other moderator which forms an annular sheath separating the oxygen and oil streams for a finite distance downstream of the nozzle tip which thus spaces the tip a finite distance from the point where combustion occurs.

3,705,109

CORROSION INHIBITING COMPOSITION AND USE THEREOF

Rudolf H. Hausler, Arlington Heights, and Leonard A. Goeller, Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Apr. 6, 1970, Ser. No. 26,084
Int. Cl. C23f 11/00
U.S. Cl. 252—392 10 Claims

A corrosion inhibiting composition of (1) a dicarboxylic acid and (2) polymeric reaction product of an epihalohydrin compound and aliphatic amine. The composition is incorporated in any substrate which contacts metal and serves to inhibit corrosion of the metal.

3,705,110

CALIBRATING FLUID FOR AUTOMATED HEMATOLOGY INSTRUMENTS

Allan L. Louderback, Temple City, and Young Youhne, Gardena, Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

No Drawing. Filed Apr. 21, 1971, Ser. No. 136,169
Int. Cl. C09k 3/00; C01n 15/06, 21/00
U.S. Cl. 252—408 4 Claims

A calibrating fluid for automated instruments for blood cell counting and hemoglobin determination comprising an admixture of nigrosin dye and a carbon black dispersion in dilute aqueous solution which exhibits absorbance

linearity in the visible and ultraviolet range having suspended therein synthetic latex particles with a 5 to 15 micron particle size range.

3,705,111
CATALYTIC COMPOSITE OF PLATINUM GROUP METAL, NICKEL, GROUP IV-A METAL AND FRIEDEL-CRAFTS METAL HALIDE ON OXIDE SUPPORT
Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Continuation-in-part of application Ser. No. 15,960, Mar. 2, 1970. This application May 11, 1970, Ser. No. 36,375
Int. Cl. B01j *11/74*
U.S. Cl. 252—439 **6 Claims**

Isomerizable hydrocarbons are isomerized using a catalytic composite comprising a combination of a platinum group component, a Group IV-A metallic component, and a nickel component with a porous carrier material. A catalytic composite comprising a platinum group component, a Group IV-A metallic component, a nickel component and a Friedel-Crafts metal halide component combined with a refractory inorganic oxide is also disclosed.

3,705,112
NOVEL HOT-PRESSED REFRACTORY ARTICLES AND PREPARATION THEREOF
Louis F. Nienart, Elizabeth, N.J., assignor to Allied Chemical Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 657,769, Aug. 2, 1967. This application Jan. 6, 1970, Ser. No. 1,060
Int. Cl. H01b *1/06;* C04b *35/66, 35/48*
U.S. Cl. 252—520 **6 Claims**

Solid, electrically conductive articles composed of a mixture of the diboride and the nitride of titanium and/or zirconium are described. These articles are prepared by hot-pressing finely divided particles of the metal with boron nitride, the mixture optionally containing elemental boron and molybdenum disilicide, at a temperature of at least 2000° C. under pressure of from 2000 to 15,000 p.s.i. under an inert atmosphere. The articles of the invention are useful as cathode connector bars for the electrolytic cell used in preparing aluminum. In addition their refractory and mechanical strength properties make them suitable for many applications in and around industrial furnaces, rocket and jet engines, and the like.

3,705,113
HYDROGENATED OLEFIN SULFONATE-ALKYL-1,2-GLYCOL DETERGENT COMPOSITIONS
Samuel H. Sharman, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Oct. 24, 1968, Ser. No. 770,386
Int. Cl. C11d *1/12*
U.S. Cl. 252—555 **7 Claims**

High performance detergent compositions comprise a mixture of hydrogenated olefin sulfonates and an alkyl-1, 2-glycol.

3,705,114
HYDROGENATED OLEFIN
William A. Sweeney, Larkspur, and Gar Lok Woo, Tiburon, Calif., assignors to Chevron Research Company, San Francisco, Calif.
No Drawing. Original application June 16, 1969, Ser. No. 833,801. Divided and this application June 16, 1971, Ser. No. 153,849
Int. Cl. C11d *1/12*
U.S. Cl. 252—555 **4 Claims**

Novel nonsoap detergent toilet bars are formed from water and a detergent prepared from a solution of a complex mixture of hydrogenated olefin sulfonates containing from 10 to 24 carbon atoms by cooling the solution to a temperature in the range of from 0° C. to 35° C. and subsequently filtering the solution to recover the improved hydrogenated olefin sulfonates as the precipitate.

3,705,115
GLYCIDYL ETHERS OF GLYCERINE-CONTAINING POLYHYDROXYL COMPOUNDS
James L. Bertram, Lake Jackson, and David O. Bowen, Freeport, Tex., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Aug. 26, 1970, Ser. No. 67,232
Int. Cl. C08g *30/16*
U.S. Cl. 260—2 EP **8 Claims**

The physical properties of glycidyl ethers of glycerine are improved by blending a polyhydroxyl-containing compound, such as glycerine, with said glycidyl ether in proportions such that the ratio of epoxide equivalents to hydroxyl equivalent in the blend is in the range of from about 1.8:1 to about 0.5:1. When such blends are cured with catalytic quantities of a curing agent, such as a tertiary amine, one or more of the physical properties such as tensile strength, percent elongation and tensile modulus are improved.

3,705,116
PROCESS FOR THE MANUFACTURE OF LIGHT BUILDING ELEMENTS
Silvio Vargiu and Mario Pitzalis, Milan, and Pierluigi Abruzzi, Bergamo, Italy, assignors to Societá Italiana Resine S.p.A., Milan, Italy
No Drawing. Filed Dec. 10, 1970, Ser. No. 97,025
Claims priority, application Italy, Dec. 23, 1969, 26,204/69
Int. Cl. C08f *47/08*
U.S. Cl. 260—2.5 B **16 Claims**

Lightweight concrete building elements are made by a process in which the polystyrene granules used are associated with a binder containing both a polyepoxy compound and a monoepoxy compound.

3,705,117
PROCESS FOR THE MANUFACTURE OF LIGHT BUILDING ELEMENTS
Silvio Vargiu and Mario Pitzalis, Milan, and Pierluigi Abruzzi, Bergamo, Italy, assignors to Societá Italiana Resine S.p.A., Milan, Italy
No Drawing. Filed Dec. 14, 1970, Ser. No. 98,102
Claims priority, application Italy, Dec. 23, 1969, 26,205/69
Int. Cl. C08f *47/08*
U.S. Cl. 260—2.5 B **14 Claims**

Lightweight concrete building elements are made by a process in which the action of epoxy binders for the polystyrene granules is assisted by the presence of an organic solvent, preferably benzene, toluene or xylene.

3,705,118
PROCESS FOR FORMING A MICROPOROUS CELLULAR POLYIMIDE
Oscar R. Abolafia, Endicott, John A. Butora, Endwell, and Michael T. Orinik, Binghamton, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 11, 1971, Ser. No. 105,466
Int. Cl. C08j *1/20*
U.S. Cl. 260—2.5 N **7 Claims**

A process for the preparation of a microporous cellular polyimide article comprising preparing a mixture in an inert solvent of polyamic acid and p,p'-oxybis(benzene sulfonyl hydrazide) as a blowing agent, forming the mixture into a shaped article, allowing the article to dry

wherein the blowing agent simultaneously decomposes to form a foamed article and heating the foamed article to cyclize the polyamic acid is disclosed. The foamed article

contains micropores of about 1 micron in diameter which improves adhesion at polymer-polymer and polymer-metal interfaces.

3,705,119

SPLITTING BLOCKED ISOCYANATES WITH A CARBOXYLIC ACID SALT OF CALCIUM, STRONTIUM, MAGNESIUM, OR BARIUM

Jerome F. Levy, Dresher, and John Kucsan, Philadelphia, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Aug. 6, 1970, Ser. No. 61,791

Int. Cl. C08g *22/40*

U.S. Cl. 260—18 TN **15 Claims**

Lower reaction temperatures for "splitting" blocked isocyanates and reacting the same with active hydrogen containing compounds, as in forming polyurethanes and polyureas, particularly in coatings, are made possible by using a carboxylic acid salt of magnesium, calcium, strontium, or barium, such as of hexanoic acid, octanoic acid, naphthenic acid, or linoleic acid, as a catalyst. The acids preferably have from 3 to about 18 carbon atoms, preferably from about 5 to about 10 carbon atoms. The catalysts are much superior to or equal to tin compounds such as dibutyl-tin di-2-ethylhexoate, stannous oleate, or stannous octoate, and are less expensive. Salts such as calcium acetate, calcium stearate, and calcium oleate are ineffective.

3,705,120

ROOM TEMPERATURE VULCANIZING COMPOSITION

Nobuhisa Kawaguchi, Yokohama, Kanagawa-ken, Japan, assignor to Fuji Polymer Industries Co., Ltd., Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 749,618, Aug. 2, 1968. This application Apr. 12, 1971, Ser. No. 133,396

Claims priority, application Japan, Aug. 21, 1967, 42/53,279

Int. Cl. C08h *9/00*

U.S. Cl. 260—18 S **6 Claims**

A fluid composition which hardens quickly upon contact with air is composed of the principal components (1) a diorganopolysiloxane endblocked by hydroxyl radicals, (2) a minor amount of an organoalkoxysilane or an organoorthosilicate, (3) a minor amount of an aluminum alcoholate and (4) a minor amount of an organic tin salt.

3,705,121

FLAVORING AND FRAGRANCE COMPOSITIONS

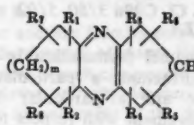
Alan O. Pittett, Atlantic Highlands, and Ranya Muralidhara, Matawan, N.J., assignors to International Flavors and Fragrances, Inc.

No Drawing. Filed Sept. 25, 1970, Ser. No. 75,782

Int. Cl. C07d *51/76*

U.S. Cl. 260—250 R **3 Claims**

Processes for altering the flavors and aromas of consumable products, including foodstuffs and tobaccos, which comprise adding thereto a small but effective amount of at least one tricyclic pyrazine having the formula



wherein *m* and *n* are each an integer from 1 to 6, and R_1, R_2, R_3, R_4, R_5, R_6, R_7, and R_8, are the same or different and represent hydrogen or alkyl; the products so produced; flavoring and fragrance compositions containing such tricyclic pyrazines; and certain novel pyrazines and processes for their production.

3,705,122

COMPOSITIONS FOR MOLDING SEALING LINERS OR THE LIKE HAVING CONTRASTING COLORS

Walter C. Gwinner, Stamford, Conn., assignor to Zapata Industries Inc., Frackville, Pa.

Original application July 27, 1967, Ser. No. 656,399, now Patent No. 3,547,746, dated Dec. 15, 1970. Divided and this application May 26, 1970, Ser. No. 40,658

Int. Cl. C08f *45/04, 45/08, 45/14*

U.S. Cl. 260—23 XA **7 Claims**

Thermoplastic resin compositions formulated with pigments to furnish contrasting colors in raised and background areas upon molding heated charges of the compositions with a die having relieved areas, and methods for molding and imparting contrasting colors to an article in a single molding operation.

3,705,123

POLYPHASE COMPOSITIONS

Bert H. Mahlman, West Chester, Pa., and Harold M. Spurlin, Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of application Ser. No. 670,112, Sept. 25, 1967, which is a continuation-in-part of abandoned application Ser. No. 606,449, Dec. 30, 1966. This application Oct. 29, 1970, Ser. No. 85,189

Int. Cl. C08f *45/52*

U.S. Cl. 260—28.5 A **8 Claims**

Polyphase compositions are described wherein a propylene polymer in crystalline but non-spherulitic form is a continuous network as one phase and the second phase contains at least 50% of a hydrocarbon wax. Polypropylene-paraffin wax is typical. They have a high degree of ductility, toughness and elongato-ability and films thereof are capable of orientation. Also describes preparation of colloidal dispersions of the propylene polymer

in hydrocarbon wax useful for making such compositions and the process of preparing the polyphase compositions.

3,705,124

WATER-BASED ENAMEL FORMULATIONS FROM ACRYLIC HYDROSOLS

Richard N. Selby and Donald M. Williams, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 735,587, June 10, 1968, which is a continuation-in-part of abandoned application Ser. No. 467,751, June 28, 1965. This application Jan. 22, 1971, Ser. No. 108,992

Int. Cl. C09d *3/80, 5/02*
U.S. Cl. 260—29.6 TA **11 Claims**

A water-based enamel formulation is disclosed containing pigment, surfactant, a particular acid acrylic interpolymer binder and a particular thickener. The enamels show improvement with respect to ease of flow, leveling ability, lappability, gloss level, gloss uniformity, color retention, hiding power, drying time and consistency stability on storage as compared to ordinary water-based paints.

3,705,125

MATERIAL FOR BONDING RESINS TO GLASS FIBERS AND COMPOSITES MADE THEREFROM

Jerome A. Preston, Granville, and Carlton J. Davis, Sr., Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation

No Drawing. Continuation of abandoned application Ser. No. 862,107, July 15, 1969, which is a division of abandoned application Ser. No. 610,487, Jan. 20, 1967, which in turn is a continuation of application Ser. No. 884,781, Dec. 24, 1969, now Patent No. 3,664,982. This application May 10, 1971, Ser. No. 142,031

Int. Cl. C08g *47/10, 51/14*
U.S. Cl. 260—37 N **12 Claims**

An improved bonding material comprising a hydrolyzed siloxane and a polyimine which is dispersible in the siloxane. The coating material is preferably applied to glass fibers at forming from an aqueous solution, and the coated fibers are preferably used to strengthen a matrix resin which is fused with the coating material so that diffusion of the polyimine into the matrix resin takes place. Composites of the coated glass fibers with matrix resins that are reactive with amine hydrogen have great strength.

3,705,126

STABILIZATION OF SYNTHETIC POLYMERS

Katsuaki Matsui, Tomoyuki Kurumada, Ichiro Watanabe, Noriyuki Ohta, Keisuke Murayama, and Syoji Morimura, Tokyo, Japan, assignors to Sankyo Company Limited

No Drawing. Filed June 10, 1970, Ser. No. 45,258

Claims priority, application Japan, June 20, 1969, 44/48,745

Int. Cl. C08f *45/60;* **C08g** *51/60*
U.S. Cl. 260—45.8 N **7 Claims**

Synthetic polymers are stabilized against photo- and thermo-deterioration thereof by having incorporated therein a piperidine-4-spiro-hydantoin derivative in a sufficient amount to prevent such deterioration, said polymers including polyolefins, polyvinyl chlorides, polyvinylidene chlorides, polyamides and polyurethanes.

3,705,127

POLYMERIC FLAME RETARDANT COMPOSITIONS

Henryk A. Cyba, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 757,764, Sept. 5, 1968, now Patent No. 3,574,230, dated Apr. 6, 1971. This application Dec. 21, 1970, Ser. No. 100,440

Int. Cl. C08f *45/60;* **C08g** *51/60*
U.S. Cl. 260—881 **7 Claims**

Novel compositions of matter comprising a polymeric compound and a haloaryl imide of a polyhalo-substituted polyhydropolycyclicdicarboxylic acid as exemplified by polypropylene and α,α.-bis(5,6,7,8,9,9-hexachloro-1,2,3,4,4a,5,8,8a-octahydro-5,8-methano-2,3 - naphthalenedicarboximido)-2,3,5,6-tetrachloro-p-xylene possesses certain desirable physical properties such as being flameproof or fire resistant.

3,705,128

FLAME RESISTANT POLYMERS CONTAINING AMIDE COMPLEXES OF METAL SALTS

Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 23, 1971, Ser. No. 165,717

Int. Cl. C08f *45/60, 45/62;* **C08g** *51/60, 51/62*
U.S. Cl. 260—45.75 R **10 Claims**

Flame resistant polymers, such as halogenated polyesters and polyvinyl chloride containing amide complexes of certain metal salts such as zinc chloride-dimethyl formamide, and articles such as molded bodies, films, etc. of such flame resistant polymers.

3,705,129

EPOXY RESIN COMPOSITION CONTAINING METALLOCENES

Tadashi Murio, Mikio Sato, and Masatzugu Ogata, Hitachi, Japan, assignors to Hitachi, Ltd., and Hitachi Chemical Co., Ltd., Chiyoda-ku and Tokyo, Japan respectively

No Drawing. Filed May 26, 1970, Ser. No. 40,731

Claims priority, application Japan, May 26, 1969, 44/40,186, 44/40,187, 44/40,188, 44/40,191; Nov. 14, 1969, 44/90,810

Int. Cl. C08g *30/10, 30/12*
U.S. Cl. 260—47 EC **14 Claims**

An epoxy resin composition having an excellent latent curing characteristic at room temperature and a good curing property comprising an epoxy resin and a metallocene or a derivative thereof. Preferred metallocenes include ferrocene and derivatives thereof. Additional curing additives, such as quinone, organic peroxides and phenol, can be employed as desired. The resultant cured epoxy resins display excellent mechanical and electrical properties.

3,705,130

FIBER FORMING POLYESTER COMPOSITION AND FIBER PRODUCED THEREFROM

Hideo Komatsu, Sadao Yuguchi, Masamitsu Tanimura, and Hiroshi Matsukawa, Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed July 28, 1971, Ser. No. 166,884

Claims priority, application Japan, July 30, 1970, 45/66,088

Int. Cl. C08g *17/08*
U.S. Cl. 260—47 C **12 Claims**

A novel flame retardant fiber forming polyester composition, useful as a textile fiber, is synthesized from (a) alpha, omega-bis (-2,6 dichloro - 4 - carboxy - phenoxy) alkane and (b) alkylene glycol.

3,705,131

POLYMERS OF POLYPHENYLENE TYPE AND METHOD OF PRODUCING THE SAME

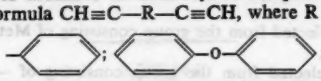
Vasily Vladimirovich Korshak, Mark Efimovich Volpin, Vladimir Alexandrovich Sergeev, Valentin Kuzmich Shitikov, and Igor Sergeevich Kolomnikov, Moscow, U.S.S.R., assignors to Ordena Lenina Institut Elementoorganicheskikh Soedineny Akademii nauk U.S.S.R., Moscow, U.S.S.R.

No Drawing. Filed Nov. 27, 1970, Ser. No. 93,442

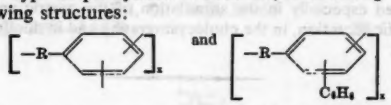
Int. Cl. C08f *9/00, 23/00*

U.S. Cl. 260—47 UA 8 Claims

A method of producing polymers of the crosslinked polyphenyl type by polycyclotrimerization of diethynyl derivatives of aromatic or heterocyclic compounds of the general formula CH≡C—R—C≡CH, where R is



or of a mixture thereof with monoethynyl organic compounds of the formula $CH{\equiv}C_6H_5$ in the presence of complex catalysts, which are complex compounds of transition metals belonging to groups IV–VIII of the Periodic Table, such as $/(RO)_3P/_nCoHal$, where R is a lower alkyl, Hal is Cl, Br, I, and $n=3$ or 4. As a result of said method, a new type of phenylenes is obtained, conforming to the following structures:



where R has the above-specified significance, and x is any number.

Such polymers are thermosetting, that is, when heated up to 150–200° C., they set and pass into an infusible and insoluble state; they feature a high thermostability up to 900° C., and remain invariably stable to thermal deformation up to temperatures of thermal decomposition thereof (500–600° C.).

3,705,132

MOISTURE-CURED COATING COMPOSITIONS

Michael Cuscurida, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed Mar. 22, 1971, Ser. No. 127,046

Int. Cl. C08g *22/10, 22/14, 22/24*

U.S. Cl. 260—75 NP 2 Claims

A polyurethane coating which dries very rapidly and cures quickly may be made by reacting a polyether triol and a polyester diol with an aliphatic polyisocyanate. Moisture cured polyurethane coatings are widely used in seamless flooring.

3,705,133

POLYESTER PROCESS

Stanley D. Lazarus, Petersburg, Va., and Paul N. Christensen, Copenhagen, Denmark, assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 596,451, Nov. 23, 1966. This application Aug. 21, 1969, Ser. No. 852,116

The portion of the term of the patent subsequent to Dec. 16, 1986, has been disclaimed

Int. Cl. C08g *17/015*

U.S. Cl. 260—75 R 17 Claims

A process for the preparation of colorless, linear high molecular weight film and fiber-forming polyalkylene terephthalates either by direct esterification or esterinterchange of terephthalic acid and/or the lower alkyl esters thereof with a glycol having 2 to 10 carbon atoms per molecule to obtain the corresponding diglycol-ester intermediate and then condensing said intermediate in the presence of a catalytic amount of at least one trivalent antimony salt of a higher aliphatic monocarboxylic acid having at least 12 carbon atoms per molecule.

3,705,134

POLYAMIDE CONTAINING ORGANO METALLIC COMPOUND

David James, ICI Fibres Limited, Pontypool, Mammouthshire, England

Filed July 24, 1970, Ser. No. 58,185

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R 5 Claims

Synthetic fiber and film forming polyamides containing organic compounds of metals of groups IV or V of the Periodic Table. The pressure of such compounds results in an increase in the rate of relative viscosity rise during the polyamidation reaction and an enhancement of the dyeability of the final polymer.

3,705,135

INHIBITING PREMATURE VULCANIZATION OF DIENE RUBBERS WITH N-THIOFORMAMIDES

Mark Dennis Wolfinger, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 26, 1970, Ser. No. 67,259

Int. Cl. C08f *27/06*

U.S. Cl. 260—79.5 B 17 Claims

Certain N-thioformamides are used to inhibit premature vulcanization of vulcanizable elastomers.

3,705,136

POLYMERIC ACRYLIC COMPOUNDS OF POLYCYCLIC HYDROCARBONS AND PROCESSES FOR PREPARING SAME

John Duval Cawley, Rochester, and Jan Willem Hendrik Faber, Hilton, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Nov. 28, 1969, Ser. No. 880,894

Int. Cl. C08f *3/64, 3/66, 7/02*

U.S. Cl. 260—79.7 6 Claims

Acrylic compounds are disclosed which comprise either thio-substituted polycyclic groups or polycyclic groups comprising at least 4 carbocyclic rings which can optionally be thio-substituted. In one embodiment, polymers can be prepared from the above acrylic compounds.

3,705,137

PRECIPITATION COPOLYMERIZATION OF METAL SALTS OF UNSATURATED CARBOXYLIC ACIDS

Kenshi Kuwahara, Shigetada Sonoda, and Masahito Ishii, Tokyo, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 612,808, Jan. 31, 1967. This application Dec. 4, 1969, Ser. No. 882,280

Int. Cl. C08f *1/11*

U.S. Cl. 260—80.3 E 5 Claims

A method of preparing copolymers of metal salts of unsaturated carboxylic acids suitable for use as a stabilizer for chlorine-containing resins, such as polyvinyl chloride, by means of precipitation copolymerization in an alcohol solution containing water. A stabilizer composition comprising a mixture of said copolymers of metal salts of unsaturated carboxylic acids and chlorine-containing resin.

3,705,138

PROCESS FOR THE PREPARATION OF AMORPHOUS COPOLYMERS OF ETHYLENE

Cornelis E. P. V. Van Den Berg, Guido Gezellelaan 34, Geleen, Netherlands

Filed June 30, 1969, Ser. No. 837,885

Claims priority, application Netherlands, July 1, 1968, 6809302

Int. Cl. C08f *15/40, 17/00, 1/56*

U.S. Cl. 260—80.7 9 Claims

A process for the preparation of amorphous copolymers of ethylene, one or more other α-alkenes, and optionally one or more compounds containing more than one C C bond, using a catalyst comprising an aluminum dihalide, a vanadium compound and an organo metal compound, the catalyst being dispersed in a liquid dispersing agent.

3,705,139

HIGH MOLECULAR COMPOSITION

Izumi Yamane, Yokohama, Masuzo Nagayama, Tokyo, and Makoto Takai, Chiba, Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

No Drawing. Filed Oct. 26, 1970, Ser. No. 84,164

Claims priority, application Japan, Oct. 30, 1969, 44/86,422, 44/86,423

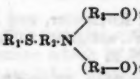
Int. Cl. C08f *3/02, 7/04, 45/00*

U.S. Cl. 260—92.8 A 9 Claims

A high molecular composition comprising a high molecular substance containing one member selected from the group consisting of alkyl sulfide compounds as an antistatic agent, said compounds being expressed by the following General Formulas a and b:

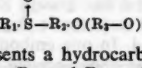
(a) $R_1 \cdot S \cdot R_2 \cdot A(R_3—O)nZ$

(wherein R_1 represents a hydrocarbon radical having 6–22 carbon atoms; R_2 and R_3 each represents a hydrocarbon radical having 1–4 carbon atoms; A represents oxygen or nitrogen, and, in case A represents nitrogen, said general formula is represented by



n represents an integer in the range of 0–100; and Z represents hydrogen or COR_4 wherein R_4 represents a hydrocarbon radical having 1–22 carbon atoms); and

(b)



(wherein R_1 represents a hydrocarbon radical having 6–22 carbon atoms; R_2 and R_3 each represents a hydrocarbon radical having 1–4 carbon atoms; and n represents an integer in the range of 0–100).

3,705,140

PEPTIDES RELATED TO THE C-TERMINAL SEQUENCE OF CCK-PZ AND CAERULEIN

Luigi Bernardi, No. 1 Via Gignous, Milan; Germano Bosisio, No. 37 Via Monte Sabotino, Palazzolo; Roberto DeCastiglione, No. 38 Via Domenichino, and Onofrio Goffredo, No. 6 Via Cremosano, both of Milan, all of Italy

Continuation-in-part of Ser. No. 721,613, April 16, 1968, abandoned. This application July 12, 1968, Ser. No. 744,315

Claims priority, application Italy, Oct. 5, 1967, 21259 A/67; June 7, 1968, 17444 A/68

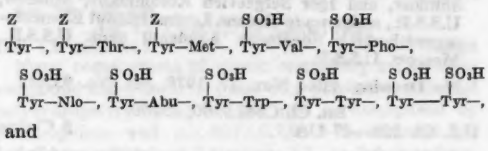
Int. Cl. A01k *27/00*; C07c *103/52*

U.S. Cl. 260—112.5 15 Claims

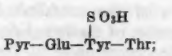
The present invention relates to new biologically active polypeptides and to the process for their preparation. More particularly the present invention relates to the polypeptides of the formula:

$$X — Gly — Trp — Y — Asp — Phe — NH_2$$

wherein X is selected from the group consisting of



and



Y is selected from the group consisting of Met-, Nle- and Abu;

Z is selected from the group consisting of $—SO_3H$ and $—PO_3H_2$, and its protected derivatives.

The invention further describes a process for the preparation of polypeptides having the above formula.

The polypeptides of the present invention display a high polyvalent biological action. In particular they display a stimulating activity on gallbladder, on biliary, gastric and pancreatic secretion and also a hypotensive activity and may be employed especially in the stimulation of the gastric and pancreatic secretion, in the cholecystography and in duodenal ulcers.

3,705,141

ADAMANTANECARBOXAMIDOALKANOIC ACIDS AND RELATED COMPOUNDS

Carl Peter Krimmel, Wauconda, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 727,698, May 8, 1968, which is a continuation-in-part of abandoned application Ser. No. 467,749, June 28, 1965. This application May 17, 1971, Ser. No. 144,304

Int. Cl. C07c *103/52*; C07g *7/00*

U.S. Cl. 260—112.5 4 Claims

The present adamantanecarboxylic acid derivatives of amino acids possess anti-biotic activity against a variety of organisms. Thus, they are anti-bacterial, anti-protozoal, and anti-algal agents. The compounds are prepared by the reaction of an adamantanecarbonyl halide, preferably the chloride, with an appropriate amino acid, dipeptide, or polypeptide.

3,705,142

SYNTHETIC THYROPROTEIN CONTAINING TRIIODOTHYRONINE PREPARED BY ADDITION OF MULTIPLE CHARGES OF IODINE TO A PROTEIN

Charles W. Turner, 717 Hilltop Drive, Columbia, Mo. 65201

No Drawing. Continuation-in-part of application Ser. No. 9,554, Feb. 9, 1970, which is a continuation-in-part of abandoned application Ser. No. 764,938, Oct. 3, 1968. This application Apr. 8, 1971, Ser. No. 132,559

Int. Cl. C07g *7/00, 15/00*; A61k *17/10*

U.S. Cl. 260—119 3 Claims

A synthetic thyroprotein containing triiodothyronine and a method of production comprising the addition of multiple charges of iodine to a proteinaceous material, interposed by oxygen sparging, to partially iodinate tyrosine in the protein to produce monoiodotyrosine and diiodotyrosine which, when oxidatively coupled, produce triiodothyronine.

3,705,143

PRODUCTION OF CASEIN BY PASSAGE THROUGH A DUCT WITH A CONSTRICTION

Jean-Jacques Mourey, Lausanne, and Ernest Badertscher, Orbe, both of Switzerland, assignors to Societe D'Assistance Technique Pour Produits Nestle S.A., Lausanne, Switzerland

Filed May 7, 1970, Ser. No. 35,591
Claims priority, application Switzerland, May 16, 1969, 7446/69
Int. Cl. B23j *1/20*
U.S. Cl. 260—120 12 Claims

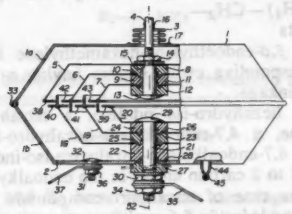
Non-sticky, uniformly-sized casein particles are prepared by passing a casein slurry through a duct with a constriction, under flow conditions such that V·De is at least 600 cm^2 sec^{-1}, where V is the mean streaming velocity of the slurry and De the hydraulic equivalent diameter of the duct. Other features of the invention are disclosed in the following specification.

3,705,144

VACUUM INTERRUPTER OR SWITCH FOR ELECTRIC POWER NETWORKS

Pierre Genequand, Geneva, Switzerland, assignor to Battelle Memorial Institute, Carouge/Geneva, Switzerland

Filed Dec. 15, 1971, Ser. No. 208,209
Claims priority, application Switzerland, Dec. 24, 1970, 19,029/70; Nov. 22, 1971, 16,945/71
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B 22 Claims



A single-pole interrupter, for a power network, having a plurality of contact elements arranged to form in the open position a series of spaced interrupting gaps, each contact element being provided with screening means for shielding these interrupting gaps from each other. Means are provided for preventing the discharge that occurs upon opening the interrupter from restarting once the current has passed through zero during the first change in alternation after the interrupter is opened.

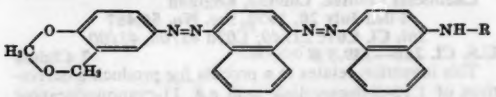
3,705,145

DISAZO DYESTUFFS

Alois Gottschlich and Klaus Leverenz, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 19, 1970, Ser. No. 91,158
Claims priority, application Germany, Nov. 28, 1969, P 19 59 774.1
Int. Cl. C09b *31/04*
U.S. Cl. 260—152 14 Claims

Disazo dyestuffs of formula



in which R denotes alkyl groups, which can be substituted by alkoxy radicals, alkoxycarbonyl radicals, nitrile, hydroxyl or halogen, as well as their preparation and their use for dyeing hydrophobic fibre materials.

3,705,146

FORMALDEHYDE ADDUCTS OF SACCHARIDES

Harry A. Smith, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 15, 1969, Ser. No. 885,323
Int. Cl. C07c *47/18*
U.S. Cl. 260—209 R 4 Claims

Formaldehyde adducts of aliphatic polyhydroxy alcohols having the general formula

$$R[O(CH_2O)_xH]_y$$

wherein

each x is independently an integer such that the average x is at least 3,
each y is an integer not less than 3, and
R is the residue formed by the removal of the hydroxyl groups from an aliphatic polyhydroxy alcohol.

Such adducts may be used in place of conventional sources of formaldehyde to prepare or cure phenolic resins.

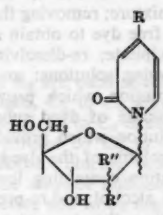
3,705,147

3-DEAZAPYRIMIDINE NUCLEOSIDES AND METHOD OF PREPARATION THEREOF

Morris J. Robins, Edmonton, Alberta, Canada, and Bruce L. Currie, Salt Lake City, Utah, assignors to University of Utah

No Drawing. Filed Aug. 22, 1969, Ser. No. 862,584
Int. Cl. C07d *51/52*
U.S. Cl. 260—211.5 7 Claims

Novel compounds comprising 3-deazapyrimidine nucleosides were synthesized from 2,4-substituted pyridine compounds by condensation with 2,3,5-tri-O-benzoyl-D-ribofuranosyl bromide, or the chloride thereof, and subsequent modification to yield the desired compounds. These novel nucleosides have the structure



(A)

wherein R is a group selected from the class consisting of hydroxyl and amine and R′ and R″ are selected from the class consisting of hydrogen and hydroxyl, have been found to inhibit carcinoma growth in animal tissue. In particular, 3-deazacytidine and 3-deazauridine have been found especially effective in inhibiting Ehrlich asceites carcinoma and leukemia L-1210 growth in mice.

3,705,148

PHOTOGRAPHIC FILMS ON HEAT RESISTANT CELLULOSE TRIACETATE

Billy R. Dotson; Robert W. Schrader; Marilyn A. Twomey, and Robert F. Williams, Jr., all of 1669 Lake Ave., Rochester, N.Y.

Continuation-in-part of Ser. No. 439, Jan. 2, 1970, abandoned. This application April 3, 1970, Ser. No. 25,571
Int. Cl. C08b *21/04*
U.S. Cl. 260—227 3 Claims

For some uses in the photographic field, practically perfect dimensional stability (resistance to visible distortion and shrinkage less than 0.5 percent is required of sensitized film which is exposed to temperatures as high as 240°–250° C for a few seconds without edgewise restraint. Conventional cellulose ester films cannot meet such rigid requirements. It has

now been found that cellulose triacetate film that (a) contains at most a few percent of plasticizer, (b) is fairly highly crystalline, and (c) is substantially free of visible distortion and haze (less than about 3 percent can meet these requirements that involve excellent high temperature dimensional stability).

3,705,149

METHOD FOR OBTAINING A DYE FREE, WATER SOLUBLE DYED SUBSTRATE FOR AMYLASE ASSAY

Arthur L. Babson, Morristown, and Susan R. Tenney, Chester, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Apr. 7, 1971, Ser. No. 132,232
Int. Cl. C08b *19/04, 25/02*
U.S. Cl. 260—233.3 R 11 Claims

Water soluble, dyed substrates from which all unreacted dye has been removed are obtained by coupling a reactive dye to a starch or starch fraction in an alkaline solution, neutralizing the reaction mixture, and removing all unreacted dye by a multiple precipitation process conducted at a controlled temperature, wherein the dyed substrate is precipitated, re-dissolved, and re-precipitated until the fluid from the last precipitation is free from dye color. Should the supernatant fluid contain dye color, the re-dissolving and re-precipitating of the dyed substrate must be continued. By conducting the purification procedure at a low temperature and utilizing a salt solution, it is possible to precipitate the dyed substrate with a relatively dilute alcohol solution, which does not interfere with the re-dissolving of the dyed substrate. Suitably, the multiple precipitation process is carried out, at about 4° C., by adding to the dyed substrate reaction mixture containing a salt concentration of from 0.34% to 1.04%, an aqueous alcohol solution which provides a final concentration of 11.5% to 18% alcohol in the total precipitation mixture; removing the supernatant fluid containing salt and free dye to obtain a partially purified dyed substrate precipitate; re-dissolving this precipitate in one of the following solutions: an aqueous solution, an aqueous salt solution which provides up to 4.5% salt in the total volume of dyed substrate solution, an aqueous alcohol solution which provides up to 21% alcohol in the total volume of the dyed substrate solution or an aqueous solution containing less than 0.14% salt and less than 10.5% alcohol; and re-precipitating the dyed substrate by adjusting the concentrations of salt and alcohol in the dyed substrate solution to 0.34% to 1.04% and 11.5% to 18%, respectively. The precipitation/re-dissolving purification procedure is continued until all free dye has been removed and the water soluble, dyed substrate obtained is suitable for use in an improved amylase procedure.

3,705,150

PROCESS FOR THE PREPARATION OF 21-DEOXY - 21-N-(N'-METHYLPIPERAZINYL)-PREDNISOLONE AND SALTS THEREOF

Zoltan Tuba, Solyom, Maria Bor, nee Szabo, Ferenc, Zoltan Komesz, Marga, Eva Weitner, nee Vari, Pataki, and Sandor Gorog, Vajda, Hungary, assignors to Richter Gedeon Vegyeszeti Gyra R.T.

No Drawing. Filed Apr. 27, 1971, Ser. No. 137,950
Claims priority, application Hungary, May 13, 1970, 389
Int. Cl. C07c *173/10*
U.S. Cl. 260—239.5 5 Claims

This invention relates to a process for the preparation of 21-deoxy-21-N - (N' - methylpiperazinyl-prednisolone and salts thereof formed with nontoxic mineral or organic acids.

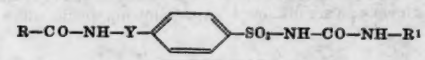
3,705,151

BENZENE-SULFONYL SEMICARBAZIDES AND PROCESS FOR PREPARING THEM

Helmut Weber, Frankfurt am Main, Walter Aumuller, Kelkheim, Taunus, Rudi Weyer, Frankfurt am Main, Karl Muth, Kelkheim, Taunus, and Kurt Stach, Mannheim-Waldhof, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Aug. 7, 1968, Ser. No. 750,747
Claims priority, application Germany, Aug. 12, 1967, F 53,221
Int. Cl. C07d *41/04*
U.S. Cl. 260—239 BA 6 Claims

Benzene-sulfonyl semicarbazides having hypoglycemic properties and corresponding to the general formula



wherein

R (a) represents phenyl which may be substituted once or twice by substituents of the group lower alkyl, alkenyl, alkoxy, alkenoxy, alkoxyalkoxy, acyl, halogen, or trifluoromethyl, or by the methylene-dioxy group, (b) thienyl which may be substituted once or twice by substituents of the group halogen, lower alkyl, alkoxy, alkenyloxy, alkoxyalkoxy, phenalkoxy or aryl, or by a polymethylene chain linked at its two ends to the thienyl group, which chain contains from 3 to 4 carbon atoms,

Y represents $—CH_2—CH_2—$, $—CH_2—CH—(CH_3)—$ or $—CH(CH_3)—CH_2—$,

R^1 represents

(a) a β,β-endoethylene-hexamethylene imine or a corresponding cyclic system having a C=C double linkage,

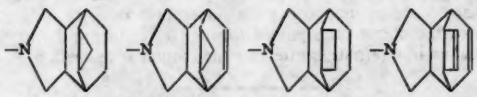
(b) a hexahydro-iso-indoline, a tetrahydro-iso-indoline, a 4,7-endoalkylene-hexahydro-iso-indoline or a 4,7-endoalkylene-tetrahydro-iso-indoline, having 1 to 2 carbon atoms in the endoalkylene group, in the case of tetrahydro-compounds the double linkage being in 5,6-position,

(c) an iso-indoline, an indoline, a hexahydro-indoline, a tetra- or decahydro-quinoline; a tetra- or decahydro-iso-quinoline,

(d) an N-3-azaspiro-[5,5]-undecane,

(e) an N-thiomorpholine,

(f) the following groups



and salts thereof.

3,705,152

PRODUCTION OF NITROGEN-CONTAINING DERIVATIVES OF 1,12-DODECANEDIOIC ACID

Antony Harold Patrick Hall, New Malden, and Stuart Nell Dancer, Great Bookham, England, assignors to BP Chemicals Limited, London, England

Filed July 20, 1970, Ser. No. 56,487
Int. Cl. C07c *21/40;* C07d *41/06, 41/00*
U.S. Cl. 260—239.3 R 7 Claims

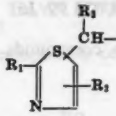
This invention relates to a process for producing derivatives of 1,12-dodecanedioic acid e.g. 11-cyanoundecanoic acid by spraying droplets of 1,1'-peroxydicyclohexylamine into a reactor containing an inert gas maintained at an elevated temperature and at a pressure of at least 300 mm. Hg.

3,705,153
NOVEL THIAZOLYLACETIC ACIDS AND SALTS THEREOF

Shin-Ichi Kaneko, Nishinomiya, Kei Takahashi, Takatsuki, and Hisao Yamamoto, Nishinomiya, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed May 4, 1970, Ser. No. 34,567
Claims priority, application Japan, May 14, 1969, 44/37,205; May 15, 1969, 44/37,825; May 31, 1969, 44/42,695, 44/42,696, 44/42,699; June 2, 1969, 44/43,405; July 8, 1969, 44/54,307; July 10, 1969, 44/54,889; Nov. 14, 1969, 44/91,616
Int. Cl. C07d *91/32*
U.S. Cl. 260—240 D **3 Claims**

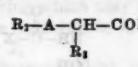
Novel thiazolylacetic acid derivatives of the formula,



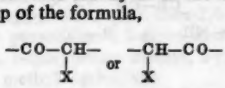
wherein R_1 is pyridyl, unsubstituted or halogen-, alkyl-, alkoxy-, phenyl- or halophenyl-substituted indolyl, unsubstituted or halogen-, nitro-, methylenedioxy-, alkyl- or alkoxy-substituted styryl; R_2 is hydrogen, alkyl or unsubstituted or substituted phenyl; R_3 is hydrogen or alkyl; and R_4 is hydroxyl, alkoxy, amino or hydrazino; and salts thereof which are useful for anti-inflammatory agents.

These thiazolylacetic acid derivatives are produced by contacting a thioamide derivative of the formula,

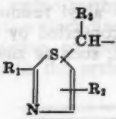
wherein R_1 has the same meaning as defined above, with a halogenated compound of the formula,



wherein R_2 and R_3 have the same meanings as defined above; R_4' is the same alkoxy as in the definition of R_4; and A is a group of the formula,



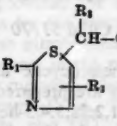
wherein X is halogen, to yield an alkyl thiazolylacetate derivative of the formula,



wherein R_1, R_2, R_3 and R_4' have the same meanings as defined above, and further, if necessary, contacting the resultant alkyl thiazolylacetate derivative with a compound of the formula,

$$R_4''—H$$

wherein R_4'' is hydroxyl, amino or hydrazino, to yield a thiazolylacetic acid derivative of the formula,



wherein R_1, R_2, R_3 and R_4'' have the same meanings as defined above.

3,705,154
SYNTHESIS OF 4H-3,1-BENZOXAZIN-2(1H)-ONE

David Aelony and William James McKillip, Minneapolis, Minn., assignors to Ashland Oil, Inc., Columbus, Ohio

No Drawing. Filed July 8, 1971, Ser. No. 160,915
Int. Cl. C07d *87/20*
U.S. Cl. 260—244 R **3 Claims**

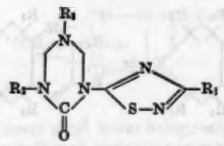
A method is disclosed for the preparation of 4H-3,1-benzoxazin-2(1H)-one wherein a trisubstituted ammonium-N-(2-hydroxymethylbenzoyl)imine is thermolytically rearranged to yield the contemplated product. The cyclic urethane obtained in accordance with the disclosed method is a monomer having usefulness in deriving copolymers with comonomers such as caprolactam, caprolactone, etc. and as a modifier for polyamide, polyurea and the like polymeric systems.

3,705,155
1-THIADIAZOLYL-HEXAHYDRO-1,3,5-TRIAZINE-2-ONES

Alfred H. Miller, Somerset, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed July 9, 1970, Ser. No. 53,655
Int. Cl. C07d *55/14*
U.S. Cl. 260—248 NS **11 Claims**

Compounds characterized by the following structural formula:



wherein R_1, R_2 and R_3 are each selected from the group consisting of hydrogen, C_1 to C_8 alkyl, C_3 to C_8 cycloalkyl, C_7 to C_{10} aralkyl, C_2 to C_4 dialkylamino, C_6 to C_{10} aryl optionally substituted by C_1 to C_4 alkyl, C_3 to C_8 alkene, C_3 to C_8 alkyne, chlorine, bromine, or nitro; R_1, R_2 and R_3 can be the same or different, have been found to be biologically active and to be useful as herbicides.

3,705,156
SUPPRESSION OF TRIS(ALKYLAMINO)-s-TRIAZINE FORMATION IN THE PRODUCTION OF CHLORO-BIS(ALKYLAMINO)-s-TRIAZINES THROUGH THE ADDITION OF FORMALDEHYDE

Harris E. Petree, Spanish Fort, Ala., assignor to Ciba-Geigy Corporation, Greenburgh, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,251
Int. Cl. C07d *55/20*
U.S. Cl. 260—249.8 **5 Claims**

The known commercial method of producing herbicidal chloro-bis((alkylamino)-s-triazines involves the use of cyanuric chloride as a starting material and the step-wise replacement of two chlorine atoms therefrom with alkylamino groups. One of the byproducts obtained is a tris (alkylamino)-s-triazine, which is formed by replacement of the third chlorine atom in cyanuric chloride. A method for suppressing the formation of tris(alkylamino)-s-triazines comprises the steps of (1) adding formaldehyde to the reaction mixture immediately after the chloro-bis(alkylamino)-s-triazine reaction is complete, thus forming a water-soluble addition product of the formaldehyde and the alkylamine, and (2) removing this addition product by subsequent distillation and filtration.

3,705,157

AZOLYLPYRIDAZINE COMPOUNDS AND QUATERNARY SALTS THEREOF

Gretchen Ellen Wiegand, 36 South Middletown Road, Pearl River, N.Y.; Victor John Bauer, 17 Cypress Peak Lane, Montvale, N.J., and Sidney Robert Safir, 684 Millbrook Road, River Edge, N.J.

Filed Oct. 19, 1970, Ser. No. 82,063
Int. Cl. C07d *51/04*
U.S. Cl. 260—250 A 10 Claims

The preparation of azolylpyridazine compounds and their conversion to quaternary azolylpyridazinium slats is described. The salts are useful for their ability to lower blood glucose in warm-blooded animals.

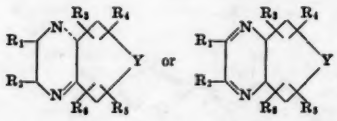
3,705,158

BICYCLIC DEHYDROPIPERAZINE COMPOSITIONS

Alan O. Pittet, Atlantic Highlands, Ranya Muralidhara, Matawan, and Ernst T. Theimer, Rumson, N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

No Drawing. Filed Aug. 31, 1970, Ser. No. 68,531
Int. Cl. C07d *51/74*
U.S. Cl. 260—250 R 5 Claims

Processes for altering the flavors and/or aromas of products, including foodstuffs and tobaccos, which comprise adding thereto a small but effective amount of at least one dehydropiperazine having the formula



where Y is $(—CH_2—)_n$; *n* is an integer from one to six; one dashed line represents a double bond and the other represents a single bond; and R_1, R_2, R_3, R_4, R_5, and R_6 are the same or different and represent hydrogen or alkyl; the products so produced; flavoring and fragrance compositions containing such dehydropiperazines; and novel dehydropiperazines and processes for their production.

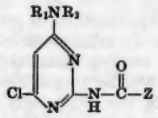
3,705,159

HERBICIDAL 2,4-DI(SUBSTITUTED) AMINO-6-CHLORO PYRIMIDINES

Rupert Schneider, Riehen, Switzerland, assignor to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

No Drawing. Filed Mar. 1, 1971, Ser. No. 119,872
Claims priority, application Switzerland, Mar. 5, 1970, 3,201/70
Int. Cl. C07d *51/42*
U.S. Cl. 260—256.4 N 10 Claims

The invention concerns novel compounds of the formula:



wherein

R_1 is hydrogen or alkyl of 1 to 6 carbon atoms,
R_2 is alkyl of 1 to 6 carbon atoms, and
Z is alkoxy of 1 to 6 carbon atoms, phenyl, phenoxy, monoalkylamino of 1 to 6 carbon atoms, dialkylamino, each alkyl substituent thereof having 1 to 6 carbon atoms, alkyl of 1 to 6 carbon atoms, or halogenated alkyl of 1 to 6 carbon atoms,

and agriculturally acceptable acid addition salts thereof. The compounds are herbicides, and possess a selective herbicidal effect in cotton, potato, leek and maize crops.

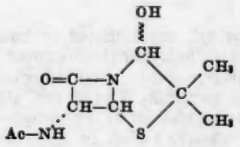
3,705,160

THIAZACYCLIC HYDROXY COMPOUNDS AND PROCESS FOR THEIR MANUFACTURE

Karl Heusler, Basel, Switzerland, and Robert Burns Woodward, Cambridge, Mass., assignors to Ciba-Geigy Corporation

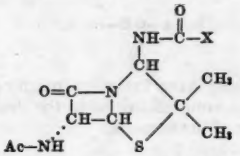
No Drawing. Filed July 15, 1969, Ser. No. 842,028
Claims priority, application Switzerland, July 23, 1968, 10,998/68; Dec. 11, 1968, 18,508/68
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 14 Claims

The invention concerns compounds of the formula



(I)

with the configuration of 6-amino-penicillanic acid, in which Ac represents the acyl radical of an organic acid, and O-esters of such compounds. They are useful as intermediates and are manufactured by splitting in a compound of the formula



(II)

in which X is a suitably substituted hydroxy or mercapto group, such group X in the presence of water. The latter, particularly a group of the formula —O—R_o, in which R_o is a 2-halogeno-lower alkyl residue and a starting material of that type is converted by treatment with a chemical reducing reagent, such as zinc in the presence of aqueous acetic acid.

3,705,161

5-HYDROXY-4-(4-PHENYL-1-PIPERAZINYL-HYDROBENZ[c,d]INDOLES

Raj K. Razdan, Belmont, and Fatima N. Johnson, Arlington, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

No Drawing. Original application Apr. 23, 1968, Ser. No. 723,572, now Patent No. 3,575,989, dated Apr. 20, 1971. Divided and this application July 27, 1970, Ser. No. 64,876
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 TR 3 Claims

5-hydroxy-4-saturated heterocyclic amino-1,2,2a,3,4,5-hexahydrobenz[c,d]indoles are prepared by amination of 1-benzoyl - 4,5 - epoxy - 1,2,2a,3,4,5-hexahydrobenz[c,d] indole with an appropriate secondary amino followed by debenzoylation and in turn are converted, if desired, to

the corresponding tetrahydro compounds by dehydrogenation. The compounds are useful as central nervous system depressants.

3,705,162

4-PHTHALIMIDINE GLUTARIMIDES

Ivars Graudums, Stolberg-Buesbach, Heinrich Mueckter, Aachen, and Ernst Frankus, Schleckheim, near Aachen, Germany, assignors to Chemie Grunenthal GmbH, Stolberg, Germany

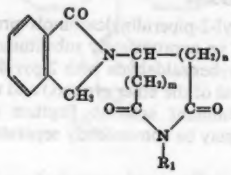
No Drawing. Filed June 27, 1968, Ser. No. 740,457

Claims priority, application Germany, July 1, 1967, P 16 70 443.1

Int. Cl. C07d 29/20

U.S. Cl. 260—281 8 Claims

Phthalimidine compounds of the formula



wherein

R_1 is hydrogen, alkyl or alkenyl with 1 to 6 carbon atoms which may be substituted by hydroxyl or mercapto groups which may be esterified or etherified, by amino or carboxyl groups, or wherein R_1 is cycloalkyl, aryl, aralkyl, or a five- or six-membered heterocyclic ring which may also be substituted, and

m and n are the numerals 0, 1, or 2, the sum of m and n being 1 or 2,

have valuable pharmaceutical properties, such as immuno-suppressive, sedative and furthermore antitumor activities in rats. Examples of such compounds are the 3- or 4-phthalimidino piperidine-2,6-diones, the 3-phthalimidino pyrrolidine-2,5-dione and their 1-alkyl, 1-amino methyl, 1-morpholino methyl, 1-piperidino methyl, 1-pyrrolidino methyl derivatives.

They are produced, for instance, by reacting the phthalimidino glutaric acids or succinic acid with ammonia or amines under ring closure conditions. The compounds wherein R_1 is an amino methyl group are produced by reacting the respective piperidine-2,6-diones or pyrrolidine-2,5-diones with amino compounds or nitrogen heterocyclic compounds in the presence of formaldehyde or the like.

3,705,163

PREPARATION OF 2-SUBSTITUTED QUINOLINES

David Horvitz and William D. Baugh, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Filed May 19, 1969, Ser. No. 825,945

Int. Cl. C07d 33/18

U.S. Cl. 260—283 SY 16 Claims

A method is provided for the preparation of 2-substituted quinolines by the reaction of an aromatic nitro compound, such as nitrobenzene, with an olefin, such as ethylene or propylene, in the presence of a catalyst mixture of (A), a compound selected from the compounds of metals of Groups IV–A, IV–B, V–B and VII–B of the Periodic Table, and (B), a substance selected from the palladium-platinum triad metals of Group VIII of the Periodic Table and compounds thereof.

3,705,164

PROCESS FOR THE PRODUCTION OF MODIFIED ANIONIC EMULSION POLYMERS WITH ANIONIC POLYURETHANE

Hans Ludwig Honig, Leverkusen; Gerhard Balle, Cologne-Flittard; Wolfgang Keberle, and Dieter Dieterich, both of Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 21, 1970, Ser. No. 82,794

Claims priority, application Germany, Oct. 23, 1969, P 19 53 348.3

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 NR 10 Claims

A process is provided for the production of stable aqueous polymer dispersions by subjecting vinyl monomers to radical emulsion polymerization in the presence of a stable aqueous dispersion of a high molecular weight polyurethane containing anionic groups.

3,705,165

N-CARBONYL DERIVATIVES OF AZABICYCLOOCTANES

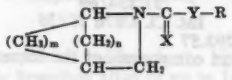
Elmar Sturm, 23, Durrmatweg, Arlesheim, Basel, and Christian Vogel, 2, Neubadrain, Binningen Basel, both of Switzerland

Filed Aug. 5, 1970, Ser. No. 61,442

Int. Cl. C07d 29/34

U.S. Cl. 260—293.54 7 Claims

Compounds of the formula



wherein

R represents lower alkyl, lower halogenalkyl, lower alkenyl, lower halogenalkenyl, cycloalkyl or cycloalkenyl,

m represents the integer 2 or 3,

n represents the integer 1 or 2 whereby the sum of *or sulphur*, $+ n = 4$, and

of the symbols X and Y one represents sulphur and the other represents oxygen or sulphur,

are disclosed as herbicidally active substances. Compositions as well as a method for controlling weeds and wild grasses with the aid of such compounds are also described.

3,705,166

ACRYLIC ACID DERIVATIVES OF 2,2,6,6-TETRAMETHYLPIPERIDINES

Keisuke Murayama and Syoji Morimura, Tokyo, Japan, assignors to Sankyo Company Limited

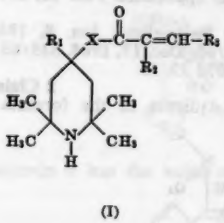
No Drawing. Filed Aug. 6, 1970, Ser. No. 61,860

Claims priority, application Japan, Aug. 15, 1969, 44/64,541

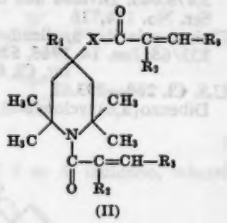
Int. Cl. C07d 29/30

U.S. Cl. 260—293.86 8 Claims

New acrylic acid derivatives having the Formulae I and II



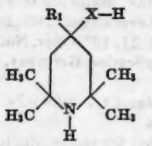
(I)



(II)

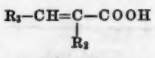
wherein R_1 represents hydrogen atom or cyano group; R_2 and R_3 may be the same or different and each represents hydrogen atom or methyl group; and X represents imino group or oxygen atom. They are useful as a stabilizer for

the deterioration of various synthetic polymers and also copolymerized to form new highly light-stable polymeric compounds. The acrylic acid derivatives (I) and (II) are produced by reacting a piperidine derivative having the formula



(III)

wherein R_1 and X are as defined above with a reactive derivative of an unsaturated aliphatic carboxylic acid having the formula



(IV)

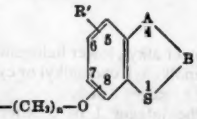
wherein R_2 nd R_3 are as defined above.

3,705,167
BENZOTHIOPYRAN COMPOUNDS

Charles Malen, Fresnes, Bernard Danree, St.-Germain-en-Laye, and Michel Lauble, Vaucresson, France, assignors to Science Union et Cie Societe Francaise de Recherche Medicale, Suresnes, France

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,016
Claims priority, application Great Britain, Apr. 25, 1969, 21,254/69
Int. Cl. C07d *29/36*
U.S. Cl. 260—293.57 **7 Claims**

Benzothiopyran compounds of the formula:



wherein A is methylene, hydroxymethylene or carbonyl; B is ethylene or vinylene which are optionally substituted by lower alkyl; *n* is 2, 3 or 4; R is di-lower alkyl amino or pyrrolidino, piperidino, morpholino, hexamethyleneimino, 3-azabicyclo (3,3,0)-3-octyl, or all these heterocyclic radicals substituted by one or more lower alkyls; and R′ is hydrogen or halogen.

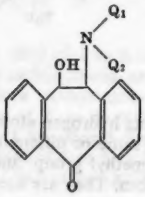
These compounds possess cardiovascular and circulatory properties.

3,705,168
HETEROCYCLICALLY SUBSTITUTED DIBENZO-(a,d)CYCLOHEPTA[1,4]DIEN-5-ONES

Albrecht Edenhofer, Riehen, and Hans Spiegelberg, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application July 1, 1969, Ser. No. 838,317, now Patent No. 3,586,718, which is a division of application Ser. No. 517,893, Jan. 3, 1966, now Patent No. 3,478,048. Divided and this application Feb. 11, 1971, Ser. No. 114,718
Claims priority, application Switzerland, Jan. 8, 1965, 232/65; Jan. 14, 1965, 525/65; Dec. 17, 1965, 525/65
Int. Cl. C07d *29/10*
U.S. Cl. 260—293.62 **2 Claims**

Dibenzo[a,d]cyclohepta[1,4]dienes of the formula



wherein Q_1 and Q_2, taken together with the nitrogen atom, is a heterocyclic group selected from the group consisting of unsubstituted and lower alkyl of up to 7 carbon atoms substituted piperidino or pyrrolidino, are prepared, inter alia, from the corresponding dibenzocycloheptatrienones. The products are useful as antidepressants.

3,705,169
HYDROXYPHENYL-2-PIPERIDINYLCARBINOLS

Carl Kaiser, Haddon Heights, N.J., and Stephen T. Ross, Berwyn, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 864,865, Oct. 8, 1969. This application Nov. 5, 1970, Ser. No. 87,340
Int. Cl. C07d *29/16*
U.S. Cl. 260—293.84 **8 Claims**

Hydroxyphenyl-2-piperidinylcarbinols prepared by the condensation of an appropriately substituted ether derivative of a hydroxybenzaldehyde with 2-pyridyl lithium followed by removal of the ether group(s) and reduction have β-adrenergic stimulant activity. Erythro and threo diastereoisomers may be conveniently separated.

3,705,170
POLYHALO-(TRIFLUOROMETHYL)PYRIDYLOXY AMIDES AND HYDRAZIDES

Florence E. Torba, Clayton, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Mar. 17, 1969, Ser. No. 807,980, now Patent No. 3,609,158. Divided and this application Oct. 2, 1970, Ser. No. 77,736
Int. Cl. C07d *31/44*
U.S. Cl. 260—295 AM **8 Claims**

Disclosed as novel compounds are (trifluoromethyl) pyridine derivatives which are substituted by a hydroxy, mercapto, alkoxy, loweralkenoxy, aryloxy, alkylthio, arylthio, alkylsulfonyl, arylsulfonyl, amino, hydrazino or oxyloweralkenoic acid or acid derivative group and optionally by chlorine and/or fluorine. Any remaining positions on the pyridine ring are taken up by hydrogen. The compounds have utility as herbicides and as active constituents of various miticidal, anthelmintic, fungicidal and bacteriocidal compositions.

3,705,171
PREPARATION OF 2-SUBSTITUTED-5-AMINO OR SUBSTITUTED AMINO-1,3,4-THIADIAZOLES

Christos George Papaioannou, Somerset, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 18, 1970, Ser. No. 38,511
Int. Cl. C07d *91/62*
U.S. Cl. 260—306.8 D **7 Claims**

The reaction of a substituted nitrile with thiosemicarbazide or a substituted thiosemicarbazide to produce 2-substituted - 5 - amino or substituted amino - 1,3,4 - thiadiazoles is described.

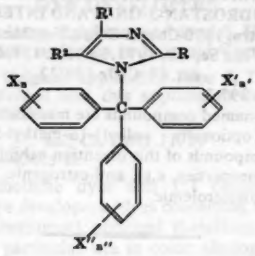
The compounds prepared by the present invention are useful as intermediates in preparing antibacterial agents, such as sulfamethizole.

3,705,172
N-TRITYL-IMIDAZOLES

Karl-Heinz Buchel, Leverkusen, Erik K. Regel, Wuppertal-Kronenberg, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Sept. 9, 1968, Ser. No. 758,594. Divided and this application Feb. 24, 1970, Ser. No. 13,797
Claims priority, application Germany, Sept. 15, 1967, F 53,504
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **20 Claims**

N-trityl-imidazoles and salts thereof of the formula:



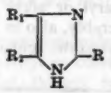
wherein

R, R^1 and R^2 are hydrogen, lower alkyl or phenyl or R^1 and R^2 together form an anellated benzene ring,

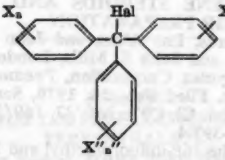
X, X′ and X″ are alkyl of 1 to 12 carbon atoms or an electro-negative moiety, and

n, *n*′ and *n*″ are an integer from 0 to 2,

or pharmaceutically acceptable acid salts thereof may be produced by reacting a silver salt or alkali metal salt of an imidazole of the formula:



with a trityl halide of the formula:



wherein the substituents are as above defined and Hal is halogen. These compounds are useful as antimycotics.

3,705,173
PROCESS FOR PREPARING ALKYL 2-BENZIMIDAZOLECARBAMATES

Charles D. Adams, Newark, and Joel B. Wommack, Jr., Claymont, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Sept. 16, 1970, Ser. No. 72,804
Int. Cl. C07d *49/38*
U.S. Cl. 260—309.2 **6 Claims**

The alkyl esters of 2-benzimidazolecarbamic acid are prepared by reacting the alkyl esters of 4-(2-aminophenyl)-allophanic acid or 3-thioallophanic acid with an acid followed by neutralization to isolate the product.

The product alkyl esters of 2-benzimidazolecarbamic acid are useful as fungicides and as intermediates for other fungicides.

3,705,174
POLYHALOALKYL BENZIMIDAZOLES

Michael H. Fisher, Somerville, Dale R. Hoff, Basking Ridge, and Richard J. Bochis, East Brunswick, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Feb. 27, 1970, Ser. No. 15,225
Int. Cl. C07d *49/38*
U.S. Cl. 260—309.2 **5 Claims**

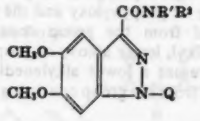
Trihalo- and tetrahalobenzimidazoles characterized by having a trifluoromethyl or pentafluoroethyl group at the 2-position and a 1-ether or 1-ester substituent at the 1-position are active as anthelmintics and as pesticides.

3,705,175
INDAZOLE-3-CARBOXYLIC AMIDES

Laszlo Magdanyi, Andras Gelleri, Laszlo Pallos, Lujza Erdelyi, nee Petocz, and Peter Gorog, Budapest, Hungary, assignors to Egyesult Gyogyszer es Tapszergyar, Budapest, Hungary

No Drawing. Filed Mar. 26, 1970, Ser. No. 23,069
Claims priority, application Hungary, Apr. 1, 1969, EE-1,639
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 C **28 Claims**

Indazole-3-carboxylic amides of the general formula



wherein

R^1 and R^2 represent independently hydrogen, straight chained or branched alkyl of up to 16 carbon atoms, cycloalkyl, naphthyl, phenyl or aralkyl group, where the phenyl and aralkyl groups may be substituted with one or two lower alkyl, alkoxy, trifluoromethyl or halo substituent, further

R^1 and R^2 may form together with the adjacent nitrogen atom and optionally with a further nitrogen atom a 5 or 6 membered heterocyclic radical,

Q represents hydrogen, alkali metal or an acyl group of 1 to 4 carbon atoms

have been prepared.

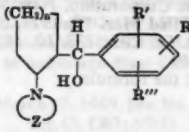
The new compounds possess valuable pharmacological activities, first of all they are potent anti-inflammatory and analgesic agents.

3,705,176
1,3-AMINOALCOHOLS

Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original applications June 13, 1966, Ser. No. 556,892, and Dec. 23, 1968, Ser. No. 786,395. Divided and this application Oct. 30, 1970, Ser. No. 85,723
Int. Cl. C07d *27/02*
U.S. Cl. 260—326.5 M **6 Claims**

Novel 1,3-aminoalcohol of the formula



IV

wherein *n* has the value of 1 to 4, inclusive, wherein

is pyrrolidino, wherein R′, R″, and R‴ are hydrogen, halogen, alkyl of 1 to 6 carbon atoms, inclusive, and alkoxy of 1 to 6 carbon atoms, inclusive, or CF_3, are prepared. The new compounds of Formula IV per se as well

as in the form of acid addition salts have diuretic activity and some of them have anti-hyperglycemic activity. Compounds of Formula IV are thus useful to provide diuresis in mammals and are also useful as oral antidiabetic agents.

3,705,177

SUBSTITUTED PROPIOLOPHENONE COMPOUNDS

Madhukar Subraya Chodnekar, Basel; Hans Thommen, Therwil, and Ulrich Schwieter, Reinach, all of Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

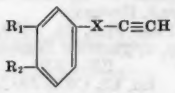
Filed Nov. 5, 1970, Ser. No. 87,316

Claims priority, application Switzerland, Nov. 14, 1969, 16957/69

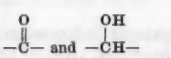
Int. Cl. C07d *13/10, 15/18*

U.S. Cl. 260—340.3 6 Claims

Compounds represented by the formula



wherein one of R_1 and R_2 represents a member selected from the group consisting of hydrogen, halogen, hydroxy, lower alkyl, lower alkoxy or propynyloxy and the other represents a member selected from the group consisting of halogen, hydroxy, lower alkyl, lower alkoxy or propynyloxy or R_1 and R_2 together represent a lower alkylenedioxy group, X is a member selected from the group consisting of



certain novel intermediate compounds therefore, processes for their preparation and compositions suitable for combatting plant fungi and/or pests containing said compounds are disclosed.

3,705,178

1,5-BIS-(2-NITRO-ANILINO)-ANTHRAQUINONE

Karl-Heinz Peters, Koeln-Buchheim, and Rutger Neeff, Leverkusen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 663,987, Aug. 29, 1967, abandoned. This application Dec. 30, 1969, Ser. No. 1,912

Int. Cl. C09b *1/32*; C07c *87/64*

U.S. Cl. 260—378 1 Claim

A pigment, 1,5-bis-(2-nitroanilino)- anthraquinone has been prepared.

3,705,179

ANTIANDROGENIC STEROIDS

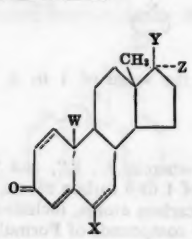
David J. Marshall, Hampstead, and Morris L. Givner, Pierrefonds, Quebec, Canada, assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Mar. 15, 1971, Ser. No. 124,556

Int. Cl. C07c *173/10, 169/20*

U.S. Cl. 260—349 25 Claims

Compounds of the formula



in which the dotted lines at positions 1,2 and 6,7 of the steroid nucleus designate optional double bonds, W is hydrogen or methyl, X is hydrogen, methyl, fluorine, chlorine or bromine, Y is carbonitrile, carboxaldehyde or isocarbonitrile and Z is hydrogen or methyl with the provisos that when an optional double bond is present at position 1,2 W is methyl and that when Y is carbonitrile or carboxaldehyde Z is methyl. The comopunds possess antiandrogenic activity rendering them useful for the treatment of androgen-dependent diseases.

3,705,180

17-OXYGENATE-2-ALPHA-METHYL-2-METHYLEN-5 ALPHA-ANDROSTAN-3-ONES AND INTERMEDIATES

Paul D. Klimstra, 1670 Chapel Court, Northbrook, Ill.

Filed Sept. 2, 1971, Ser. No. 177,457

Int. Cl. C07c *169/22*

U.S. Cl. 260—397.3 5 Claims

The above-named compounds are manufactured from 17β-hydroxy-17α(optionally alkyl)-1α-methyl-5α-androstan-3-ones. The compounds of this invention exhibit valuable pharmacological properties, e.g., anti-estrogenic, anti-fungal and anti-hypercholesterolemic.

3,705,181

METHOD FOR THE PREPARATION OF 6-METHYL-3-OXO-DELTA 4,6 STEROIDS

Jekishan R. Parikh, 2614 Russet Dr., Kalamazoo, Mich., and Max E. Breuer, 6448 Cypress, Kalamazoo, Mich.

Filed Oct. 19, 1971, Ser. No. 190,654

Int. Cl. C07c *169/34*

U.S. Cl. 260—397.4 2 Claims

The isomerization of 6-methylene-pregn-4-ene-3-keto compounds to the corresponding 6-methyl-3-oxy-$\Delta^{4,6}$-pregnadiene compounds is carried out by their treatment with a strong acid, preferably an aryl or alkyl sulfonic acid, sulfuric or perchloric acid; preferably, also in the presence of an acylating agent such as a carboxylic acid anhydride or chloride.

3,705,182

16β-DIFLUOROMETHYL AND 16-DIFLUOROMETHYLENE STEROIDS AND PROCESSES FOR THEIR PREPARATION

John A. Edwards, Los Altos, and John H. Fried, Palo Alto, Calif., and John S. Mills, London, England, assignors to Syntex Corporation, Panama, Panama

No Drawing. Filed Feb. 24, 1970, Ser. No. 13,813

Int. Cl. C07c *169/32, 169/34*

U.S. Cl. 260—397.4 13 Claims

Steroids of the 16β-difluoromethyl and 16-difluoromethylene pregnane series are described. These compounds are useful as progestational and anti-inflammatory agents. Also described are processes useful for preparing these compounds from corresponding Δ^{16} pregnane starting compounds utilizing 16α-benzenesulfonyldifluoromethyl-20-keto,16-difluoromethyl-Δ^{16}, 16α - benzenesulfonyldifluoromethyl-20-hydroxy and 16-difluoromethylene-20-hydroxy pregnane intermediates.

3,705,183

NOVEL CROSSLINKED CHROMIUM COMPLEXES

Fred Lee Bunger and Earl Phillip Moore, Jr., Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 12, 1970, Ser. No. 80,215

Int. Cl. C07f *11/00*

U.S. Cl. 260—438.5 C 7 Claims

Adhesion between thermosetting resins and inorganic or organic fillers is enhanced by treatment of the filler

material, prior to forming a composite with the resin, with a solution of a chromium complex formed by reaction of a Cr(III) salt with a C_2–C_{11} monocarboxylic acid and with an organic molecule having two functional groups independently selected from hydroxyl, amino groups, and carboxyl. Composites made in this manner are resistant to degradation by hot water.

3,705,184

1:1 CHROME-COMPLEXED AZOMETHINE DYE DEVELOPERS

Arthur B. Goulston, Brighton, and Paul S. Huyffer, Lynnfield, Mass., assignors to Polaroid Corporation

No Drawing. Original application June 4, 1969, Ser. No. 830,480. Divided and this application Jan. 17, 1972, Ser. No. 218,229

Int. Cl. C07f *11/00*

U.S. Cl. 260—438.5 R **8 Claims**

Novel azomethine dyes and 1:1 chrome-complexed azomethine dye developers (dyes containing a silver halide developing substituent) obtained therefrom, which complexes are of particular use in color photography.

3,705,185

N-AROYL SULFONAMIDES

George G. I. Moore, White Bear Lake, and Alvin C. Conway, North St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed April 14, 1969, Ser. No. 816,038

Int. Cl. C07c *143/74*

U.S. Cl. 260—465 D **15 Claims**

N-Aroylperfluoroalkanesulfonamides wherein the perfluoroalkane group is methyl or ethyl and the aryl group is phenyl, naphthyl, pyridyl, thienyl, furyl, or pyrazinyl, optionally substituted, and their pharmaceutically acceptable salts, are active anticonvulsant agents. Processes for the preparation of these compounds are described.

3,705,186

PROCESS FOR THE PREPARATION OF DIPHENYL TEREPHTHALATE

Sasanka Sekhar Naskar, Witten-Ruhr; Hans-Leo Hulsmann, Wengern, and Gustav Renckhoff, Witten-Ruhr, all of Germany, assignors to Chemische Werke Witten GmbH, Witten/Ruhr, Germany

Filed Jan. 16, 1969, Ser. No. 791,767

Claims priority, application Germany, Jan. 31, 1968, P 16 68 894.9

Int. Cl. C07c *69/82*

U.S. Cl. 260—475 PN **18 Claims**

A process for the preparation of pure, colorless diphenyl terephthalate which comprises heating a dialkyl terephthalate with phenyl acetate in the presence of activated carbon to temperatures above 150°C. in an inert atmosphere, then adding a transesterification catalyst, such as a titanic acid ester, thereto, removing the alkyl acetate formed in the reaction and introducing the hot carbon-containing crude ester into a relatively high boiling aromatic hydrocarbon, such as xylene, also in an inert atmosphere, and crystallizing the product after removing the activated carbon through filtration. Optionally, fresh adsorbent may be added along with the aromatic hydrocarbon prior to crystallization.

3,705,187

PHENYL DERIVATIVES

Madhukar Subraya Chodnekar, Basel, Albert Pfiffner and Norbert Rigassi, Arlesheim, and Ulrich Schwieter, Reinach, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Feb. 2, 1970, Ser. No. 8,055

Claims priority, application Switzerland, Feb. 14, 1969, 2,256/69

Int. Cl. C07c *69/76*

U.S. Cl. 260—476 R **6 Claims**

Benzene compounds substituted with an aliphatic side chain containing at least six carbon atoms wherein the side chain can contain epoxy groups, olefinic unsaturation or epithio groups which are useful in killing and preventing proliferation of insects by upsetting their hormone balance, said compounds being prepared by condensing a phenyl halide with an aliphatic aldehyde or ketone via a Grignard reaction.

3,705,188

NAPHTHYL-N-CYANOFORMYL CARBAMATES

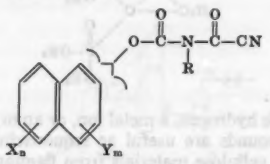
Malcolm Scott Singer, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sept. 8, 1970, Ser. No. 70,498

Int. Cl. C07c *125/06*

U.S. Cl. 260—479 C **3 Claims**

Compounds of the formula:



wherein R is alkyl of 1 to 4 carbon atoms, X and Y are halogen of atomic number 9 to 35, nitro, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, n is 0 to 3, and m is 0 to 3. The compounds are insecticides.

3,705,189

ESTER ISOCYANATES

William D. Emmons, Huntingdon Valley, and Jerome F. Levy, Bethayres, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Original application Jan. 6, 1966, Ser. No. 519,001, now Patent No. 3,468,934, dated Sept. 23, 1969. Divided and this application July 11, 1969, Ser. No. 841,128

Int. Cl. C07c *69/36*

U.S. Cl. 260—485 J **2 Claims**

This invention concerns novel ester isocyanates derived from acyloxyalkylamine hydrochlorides. The novel compounds may contain a hetero atom in either the acid or alkanolamine moiety and may contain oxalic acid as the acyl moiety.

3,705,190

PREVENTION OF POLYMER FOULING OF MONOMER PROCESSING APPARATUS

Theodore E. Bockstahler, and Curtis R. Hunt, both of Houston, Tex., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed March 17, 1969, Ser. No. 807,958

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 R **8 Claims**

Solvents for polymer formed during the preparation of ethylenically unsaturated monomers are introduced into processing zones for the monomer without interfering with said processing. Neutral oil, a fraction of coal tar low in phenolic content and having a large proportion of methyl naphthalenes with smaller amounts of mononuclear and polynuclear aromatic hydrocarbons and phenolic compounds, is particularly preferred as the solvent.

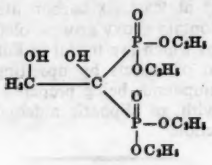
3,705,191

SUBSTITUTED ETHANE DIPHOSPHONIC ACIDS AND SALTS AND ESTERS THEREOF

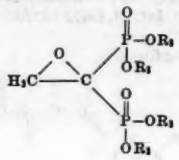
Al F. Kerst, Littleton, Colo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Apr. 13, 1970, Ser. No. 27,988
Int. Cl. C07d 9/38
U.S. Cl. 260—502.4 P 1 Claim

Substituted ethane diphosphonic acids and salts and esters thereof as exemplified by the ester compound having the formula



tetraethyl, 1,2 dihydroxy ethane-1,1-diphosphonate and processes for preparing the same which generically comprise the "de-oxiranization" of an epoxy ethane diphosphonate having the formula



wherein R_3 is hydrogen, a metal ion, or an organic radical. These compounds are useful as sequestering agents and in retarding cellulose materials from flaming.

3,705,192

METHOD OF PREPARING LIGHT-COLORED OLEFIN SULFONATE

Masuzo Nagayama and Hiroshi Okada, Tokyo, Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1970, Ser. No. 62,927
Claims priority, application Japan, Aug. 16, 1969, 44/64,923
Int. Cl. C07c 143/10, 143/16
U.S. Cl. 260—513 R 4 Claims

A method of preparing a light-colored olefin sulfonate comprising the steps of: an olefin feed consisting essentially of straight-chain olefin, which has 10 to 22 carbon atoms, and containing such impurities as will cause the coloring of the sulfonation products thereof, is brought into contact with either a hydrogenated five-membered heterocyclic compound, wherein the hetero-atom is a nitrogen atom, said ring also having a carbonyl radical, or butyrolactone, or, if necessary, a mixture of water therewith, to extract and remove said impurities contained in the feed; the resultant refined olefin is sulfonated with sulfur trioxide gas, neutralized, and subsequently hydrolyzed.

3,705,193

PURIFICATION OF BENZOIC ACID

Michael W. Clark, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 8, 1969, Ser. No. 883,270
Int. Cl. C07c 51/42
U.S. Cl. 260—525 6 Claims

Benzoic acid made by the oxidation of toluene has improved purity and color stability if, prior to the final purification step, it is contacted with oxygen (air) at 125–290° C.

3,705,194

AMINOADAMANTANE DERIVATIVES AND METHOD FOR THEIR PRODUCTION

Arthur Scherm, Bad Homburg, and Dezso Peteri, Frankfurt (Main), both of Germany, assignors to Merz & Co., Chemische Fabrik, Frankfurt-am-Main, Germany

Filed Aug. 11, 1970, Ser. No. 63,018
Claims priority, application Germany, Aug. 13, 1969, P 19 41 218.1
Int. Cl. C07c 103/00
U.S. Cl. 260—561 A 4 Claims

N-substituted 1-aminoadamantanes are prepared by reacting an 1-aminoadamantane with a haloacetyl halide and further reacting the resulting reaction product with an alkaline salt of amino-ethanol. The prepared compounds possess excellent virostatic properties.

3,705,195

DIALKYL AND ALKYL-ALKOXYALKYL DERIVATIVES OF N-[OCTAHYDRO - 1,2,4 - METHENOPENTALENYL-(5)]-OXIME CARBAMATES

Claus Dieter Weis, Arlesheim, Basel-Land, and Karl Gatzi, Basel, Switzerland, assignors to Ciba-Geigy Corporation

No Drawing. Original application Dec. 18, 1967, Ser. No. 691,135, now Patent No. 3,555,092. Divided and this application Sept. 4, 1970, Ser. No. 69,888
Int. Cl. C07c 131/02
U.S. Cl. 260—566 AC 1 Claim

Certain oxime N-[octahydro-1,2,4-methenopentalenyl-(5)]-carbamates are disclosed as fungicides; compositions containing these carbamates as fungicidal agents and methods of controlling fungi therewith are also described.

3,705,196

SYNTHESIS OF ALIPHATIC AND ALICYCLIC ETHERS

John O. Turner, West Chester, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Oct. 31, 1969, Ser. No. 873,094
Int. Cl. C07c 41/10
U.S. Cl. 260—611 R 7 Claims

Aliphatic and alicyclic hydroperoxides and peroxides in the presence of a suitable alcohol and acid catalyst are converted to the corresponding ethers.

3,705,197

BIS(2-FLUORO-2,2-DINITROETHYL) FORMAL PREPARATION

Lloyd A. Kaplan, Silver Spring, and Robert E. Oesterling, Adelphi, Md., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Mar. 31, 1964, Ser. No. 357,016
Int. Cl. C07c 41/00, 43/12
U.S. Cl. 260—615 A 10 Claims

1. The method of preparing bis(2-fluoro-2,2-dinitroethyl) formal of high purity which comprises dissolving 2,2,8,8-tetranitro-4,6-dioxa-1,9-nonanediol in an alkaline reaction medium and fluorinating the resultant solution.

3,705,198

PROCESS FOR INHIBITING COLOR FORMATION IN O-NITROPHENOL

Marrine A. Terpstra, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed May 29, 1969, Ser. No. 829,085
Int. Cl. C07c 79/26
U.S. Cl. 260—622 R 5 Claims

The formation of color bodies in o-nitrophenol is inhibited by treatment of the reaction mass with an alkali metal bisulfite, alkali metal metabisulfite, urea, or sulfur dioxide.

3,705,199

ALKALI TREATED HYDROGENATION CATALYST

Albert J. de Berardinis, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

No Drawing. Filed Apr. 30, 1970, Ser. No. 33,496

Int. Cl. B01j *11/22*; C07c *31/18*

U.S. Cl. 260—635 C 11 Claims

An improved supported nickel hydrogenation catalyst is described as well as the method for producing this improved catalyst and the use of the catalyst in the hydrogenation of sucrose to yield a mannitol enriched hydrogenation product.

3,705,200

PROCESS FOR TELOMERIZING CONJUGATED DIOLEFINS WITH AROMATICS AND OLEFINS

William Bunting, Baton Rouge, La., and Arthur W. Langer, Jr., Watchung, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 15,286, Feb. 27, 1970. This application Oct. 30, 1970, Ser. No. 85,726

Int. Cl. C07c *15/00*

U.S. Cl. 260—668 22 Claims

An improved process for telomerizing conjugated diolefins with aromatics and olefins, which comprises contacting a diolefin with an aromatic or an olefin, at reaction conditions in the presence of an organosodium compound chelated with an alkyl or cycloalkyl tertiary polyamine. In a preferred embodiment butadiene is telomerized with toluene, in the presence of a benzylsodium catalyst complexed by heptamethyltetraethylenepentamine to yield pentenylbenzene, which is a useful intermediate for the production of detergents, surfactants, plasticizers and fire retardant additives.

3,705,201

ALKYLATION OF AROMATICS WITH ALKYL HALIDES

Stephen N. Massie, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed June 14, 1971, Ser. No. 153,111

Int. Cl. C07c *3/52*

U.S. Cl. 260—671 C 9 Claims

An alkylatable aromatic hydrocarbon is alkylated with an alkyl halide at a temperature in the range from about 45° F. to about 600° F. in the presence of a catalyst comprising a molybdenum-carbon monoxide compound in which the molybdenum is present in a zero valence state.

3,705,202

ALKYLATION OF AROMATICS WITH OLEFINS

Stephen N. Massie, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed May 12, 1971, Ser. No. 142,819

Int. Cl. C07c *3/52*

U.S. Cl. 260—671 C 18 Claims

An alkylatable aromatic hydrocarbon is alkylated with an olefinic hydrocarbon at a temperature in the range from about 45° F. to about 600° F. in the presence of a catalyst comprising a molybdenum-carbon monoxide compound in which the molybdenum is present in the compound in a zero valence state.

3,705,203

METHOD FOR PURIFYING BIPHENYL

William E. Smith, 3712 Chestnut Hill Drive, Midland, Mich.

Filed Nov. 23, 1970, Ser. No. 92,317

Int. Cl. C07c *7/00*

U.S. Cl. 260—674 R 2 Claims

Biphenyl contaminated with methylbiphenyls may be purified by heating the crude biphenyl to a melt, oxidizing the methylbiphenyls to their corresponding acids by passing air or oxygen through the melt, and removing the acids formed through distillation.

3,705,204

PROCESS FOR RECOVERING CONJUGATED DIOLEFINS SELECTIVELY FROM A C_5 FRACTION

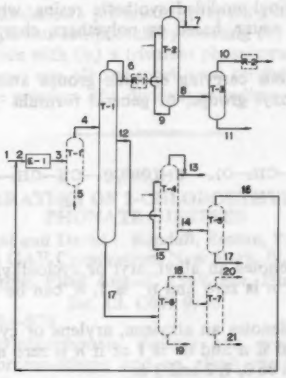
Tatsuo Horie, Tokyo, and Syunichi Yamamoto and Shinji Gotoh, Yokohama, Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Continuation-in-part of application Ser. No. 729,765, May 16, 1968. This application Aug. 7, 1970, Ser. No. 62,153

Claims priority, application Japan, May 18, 1967, 42/31,188

Int. Cl. C07c *7/08*

U.S. Cl. 260—681.5 2 Claims



A process for recovering useful conjugated diolefins selectively and efficiently from a C_5 fraction obtained by cracking of hydrocarbons by a combination of steps of a heat treatment of the starting C_5 fraction under relatively mild conditions, division of thus heat-treated fraction into substantially three fractions in a fractionator, i.e. first, second and third fractions, and recycling of said second fraction to the starting heat treatment step.

3,705,205

HYDROXYLATED COPOLYMERS COMPOSED OF MONOMETHYLSILOXANE UNITS AND DIPHENYLSILOXANE UNITS

Robert C. Antonen, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

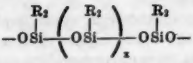
No Drawing. Original application Feb. 25, 1969, Ser. No. 802,217, now patent No. 3,632,794, dated Jan. 4, 1972. Divided and this application Oct. 27, 1970, Ser. No. 84,515

Int. Cl. C08g *47/04*, *31/32*

U.S. Cl. 260—825 9 Claims

Hydroxylated copolymers of $(C_6H_5)_2SiO$ units and $CH_3SiO_{1.5}$ units are disclosed. The diphenylsiloxane units

are present in an amount of 20 to 50 mol percent and are bonded to monomethylsiloxane units which contain the hydroxyl groups. Also disclosed are the above hydroxylated copolymers modified by linking segments of



where x is at least 2 and R is methyl, phenyl or 3,3,3-trifluoropropyl and the segments are present in amounts of 1 to 50 weight percent. The hydroxylated copolymers and the modified hydroxylated copolymers are resins useful in protective coatings, laminates, release coatings and molding resins.

3,705,206

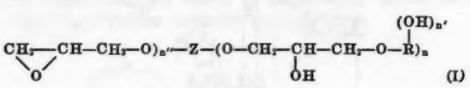
VINYL ETHERIFIED EPOXY RESINS COPOLYMERIZED WITH CARBOXY AND VINYL CONTAINING MONOMERS

Bernhard Broecker, Hamburg, Germany, assignor to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany

No Drawing. Filed Dec. 23, 1970, Ser. No. 101,092
Claims priority, application Switzerland, Dec. 24, 1969, 19,207/69
Int. Cl. C08g 45/04
U.S. Cl. 260—837 10 Claims

The present invention concerns a process for the manufacture of vinyl-modified synthetic resins, which can be diluted with water, based on polyethers, characterized in that

(a) compounds carrying epoxide groups and optionally also hydroxyl groups, of general formula



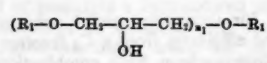
(I)

wherein

(I) Z denotes an alkyl, aryl or cycloalkyl radical, if either n is zero and n'' is 1, n' can be 0, 1, 2 and 3 or

(II) Z denotes an alkylene, arylene or cycloalkylene radical if n and n'' is 1 or if n is zero and n'' is 2, n' can be 0, 1, 2 and 3 or

(III) Z denotes the radical of the following formula:

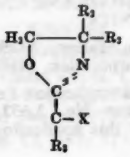


if n is zero and n'' is 2, or if n as well as n'' is 1, with n_1 in all cases being zero or a small number and with R_1 representing an aliphatic or aromatic radical,

are etherified by heating, optionally in the presence of catalysts, with

(b)(b') alkanolamides of unsaturated fatty acids and/or (b'') oxalolines of unsaturated fatty acids, of general formula:

(II)



wherein R_2 represents a hydroxymethyl or alkyl radical with 3 carbon atoms, with at least one R_2 having to be a hydroxymethyl radical, R_1 is a hydrocarbon with single or multiple unsaturation and with 3 to 18 carbon atoms, preferably 16 to 18 carbon atoms, and X denotes H_2 or $=CH_2$, and

(c) the etherification products are reacted with such quantities of α,β-ethylenically unsaturated monocarboxylic acids and/or polycarboxylic acids and, where they exist, their anhydrides and/or their half-esters with monoalcohols with 1 to 4 carbon atoms, optionally in the presence of other vinyl or vinylidene compounds, by heating, so that the reaction products have an acid number of at least 25, and

(d) thereafter the reaction products, containing carboxyl groups, are treated with such amounts of ammonia and/or strong organic nitrogen bases, up to complete or partial neutralization, that the reaction products are adequately capable of dispersion in water or dilution with water.

3,705,207

MOLTEN ADHESIVES CONTAINING POLYAMIDE AND POLYVINYL ALCOHOL

Stanley Albert Sills, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Jan. 2, 1970, Ser. No. 455
Claims priority, application Great Britain, Jan. 7, 1969, 1,034/69; May 5, 1969, 22,710/69
Int. Cl. C08g 41/04
U.S. Cl. 260—857 3 Claims

Polyamides with adhesive properties by the incorporation therein of polyhydric alcohols, e.g. polyvinyl alcohol, mannitol, sorbitol. Improves bonding to unmodified polyamides, polyesters, aluminium, titanium, stainless steel and glass.

3,705,208

POLYESTER RESIN AND METHOD OF MANUFACTURING THE SAME

Masaji Nakamuta, 1260 Kitautami, Mizuki-cho; Michio Tsukui, 48, Miramikoya-cho; Junji Mukai, 336-27, Kaneido, Kuiji-cho; Toshikazu Narahara, 36, 1-chome, Nishinarusawa-cho, and Sumio Noguchi, 7-24, Li-chome, Ose-cho, all of Hitachi-shi, Japan

Filed Nov. 28, 1969, Ser. No. 880,926
Claims priority, application Japan, May 9, 1969, 44/35164
Int. Cl. C08f 21/00, 21/02, 27/12; C08g 17/06, 17/10
U.S. Cl. 260—861 21 Claims

A polyester resin obtained by the polycondensation from a hydrogenated polydiene having two ester conjunction forming functions at the ends of a chain thereof and an organic compound having at least one function capable of forming ester conjunction with said forming function. The present disclosure is also directed to a method of manufacturing said polyester resins and polyesters compositions produced thereby.

3,705,209

FLAME RETARDANT POLYMERIC COMPOSITIONS

Albert S. Matlack, Hockessin, and Robert J. Schwarz, Sherwood Park II, Del., assignors to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Feb. 26, 1970, Ser. No. 14,680
Int. Cl. C09k 3/28
U.S. Cl. 260—861 6 Claims

Readily flammable polymers are rendered flame retardant by the addition of 8 to 20% of a bromine-containing polyether which is a polymer of a bromo-substituted oxetane or 3 to 20% of the bromine-containing polyether and 1 to 15% of an antimony compound. When antimony is present the combined amount of bromine-containing polyether and antimony compound is at least 5% by weight of the total composition.

3,705,210

CROSS-LINKABLE COMPOSITIONS BASED ON VINYL CHLORIDE CROSS-LINKABLE COPOLYMERS AND ELASTOMERS

Alexis Mathieu, Brussels, Belgium, and Claude Barberot, Paris, France, assignors to Solvay & Cie, Brussels, Belgium

No Drawing. Filed Jan. 29, 1970, Ser. No. 6,935
Claims priority, application France, Feb. 4, 1969, 6902422
The portion of the term of the patent subsequent to Feb. 22, 1989, has been disclaimed
Int. Cl. C08f 29/24, 37/18
U.S. Cl. 260—876 R 16 Claims

The cross-linkable composition contains from about 1 to 18% by weight of one or more elastomers and 99 to 82% by weight of a cross-linkable vinyl polymer based on vinyl chloride. The cross-linkable vinyl polymer is obtained by polymerization of 3 to 50 parts by weight of a mixture of a diolefin and one or more monomers chosen from the nitriles and esters of unsaturated monocarboxylic acid and unsaturated polycarboxylic acid, in the presence of 100 parts by weight of a copolymer of vinyl chloride and a monomer containing at least 8 carbon atoms and which is a vinyl ester of a monocarboxylic acid, an ester of an unsaturated mono- or polycarboxylic acid or an alkyl vinyl ether. The cross-linkable composition has excellent elasticity and processability at low temperature and is cross-linked rapidly and completely to produce semi-rigid products which have good dielectric properties and excellent mechanical properties.

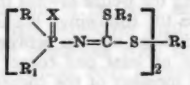
3,705,211

BISPHOSPHORYLATED IMIDODITHIOCARBONATES AND METHODS FOR THEIR PREPARATION

Roger Williams Addor and David Edgar Allman, Pennington, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 640,836, May 24, 1967. This application July 27, 1970, Ser. No. 58,676
Int. Cl. A01n 9/36; C07f 9/40
U.S. Cl. 260—926 6 Claims

Bis-N-phosphorylated compounds represented by the structure:



wherein R and R_1 are each members selected from the group consisting of loweralkyl, lower alkoxy and phenyl; X is sulfur and oxygen; R_2 is loweralkyl, loweralkenyl, benzyl or halo-substituted benzyl; and R_3 is a lower alkylene radical, such as methylene, ethylene, loweralkyl substituted ethylene, trimethylene, loweralkyl substituted trimethylene, oxydimethylene, tetramethylene or loweralkyl substituted tetramethylene. They find utility as insecticides and arachnicides and are highly effective against both the larval and adult stages of insects.

3,705,212

PHOSPHONYLCARBAMYLOXY-PHOSPHONATES

Henry Martin, Gellertstrasse 24, and Jozef Drabek, Herrengrabenweg 14, both of Basel, Switzerland

No Drawing. Filed Aug. 6, 1970, Ser. No. 61,819
Claims priority, application Switzerland, Aug. 11, 1969, 12,130/69
Int. Cl. C07f 9/38; A01n 9/36
U.S. Cl. 260—926 6 Claims

2,2,2-trihalo - 1 - [O,O - dialkylphosphonylcarbamoyloxy]-ethylphosphonic acid ester are very effective substances for combating insects, nematodes, members of the order Acarina and plant-pathogenic bacteria and fungi. They may be applied in the form of pesticidal preparations.

3,705,213

ADAMANTOYL AND ADAMANTYL (ALKYL) GLYCEROPHOSPHORYL (AND PHOSPHONYL)ETHANOLAMINES

Francis R. Pfeiffer, 201 Sussex Drive, Cinnaminson, and Jerry A. Weisbach, 207 Philellena Road, Cherry Hill, both of N.J.

Filed July 1, 1969, Ser. No. 838,327
Int. Cl. C07f 9/08; A61k 27/00
U.S. Cl. 260—945 7 Claims

The compounds are adamantyl substituted glycerophosphoryl (and phosphonyl)ethanolamines having renin inhibitory activity.

3,705,214

CATALYZED PROCESS FOR PRODUCING PENTAVALENT PHOSPHORUS DERIVATIVES

Donald J. Martin, Irvington, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Apr. 15, 1970, Ser. No. 28,939
Int. Cl. C07f 9/28, 9/50
U.S. Cl. 260—969 16 Claims

There is disclosed a process for preparing organo pentavalent phosphorus compounds by reacting (a) an aromatic or vinyl halide with (b) a trivalent phosphorus compound having at least one alkoxy substituent on the phosphorus atom, in the presence of a divalent palladium salt catalyst.

3,705,215

PREPARATION OF 2-CHLOROETHYL PHOSPHONATE DIESTERS

Calvin Vogel and David I. Randall, Easton, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Aug. 7, 1969, Ser. No. 848,327
Int. Cl. C07f 9/40
U.S. Cl. 260—970 10 Claims

2-haloethylphosphonate diesters are prepared from 1-chloro-2-bromo-ethane and an alkali metal salt of a secondary phosphite wherein the reaction is carried out in the presence of an aprotic, dipolar solvent such as N-methyl-2-pyrrolidone. Said diesters are readily hydrolyzed to 2-chloroethylphosphonic acid useful as a plant growth stimulant.

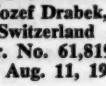
3,705,216

PREPARATION OF TRIVALENT AND PENTAVALENT THIOESTERS OF PHOSPHORUS

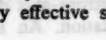
Charles Edward Farley, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 575,521, Aug. 29, 1966. This application Dec. 22, 1969, Ser. No. 887,410
Int. Cl. C07f 9/28
U.S. Cl. 260—970 7 Claims

Organophosphorus thioesters of the formula



where R and R′ are alkyl, cycloalkyl, or aryl, Q is oxygen or sulfur, n is 0 or 1, and x is 0, 1, or 2 are prepared by reacting a phosphine of the formula



with a disulfide of the formula

R'SSR'

in an aqueous or a non-aqueous medium and in the presence or absence of a radical inhibitor.

3,705,217
PRODUCTION OF HALOETHYLPHOSPHONATE DIESTERS
Calvin Vogel, Easton, Pa., assignor to GAF Corporation, New York, N.Y.
No Drawing. Filed Oct. 17, 1969, Ser. No. 867,391
Int. Cl. C07f 9/40
U.S. Cl. 260—969 8 Claims

2-haloethylphosphonate diesters are prepared by the reaction of a vinyl or vinylene compound, a trialkyl or triaryl phosphite and halogen by reaction at a temperature of about 30 to 100° C.

3,705,218
O-ETHYL-S-PROPYL-S-PHENYL-DITHIOPHOSPHATES
Shigeo Kishino, Akio Kudamatsu, and Kouzo Shiokawa, Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Dec. 23, 1970, Ser. No. 101,139
Claims priority, application Japan, Dec. 25, 1969, 44/103,795
Int. Cl. C07f 9/18; A01n 9/36
U.S. Cl. 260—964 9 Claims

O-ethyl-S-propyl-S-phenyl-dithiophosphates wherein the phenyl group is optionally substituted by halogen or lower alkyl, which possess arthropodicidal, especially insecticidal and acaricidal, properties.

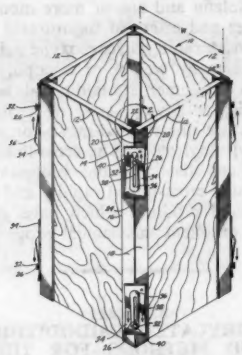
3,705,219
METHYLENEDIPHOSPHONATE ESTERS
Denzel Allan Nicholson, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Continuation-in-part of application Ser. No. 770,860, Oct. 25, 1968. This application Dec. 20, 1968, Ser. No. 785,741
Int. Cl. C07f 9/40
U.S. Cl. 260—932 2 Claims

Methylene diphosphonate esters of the formula

are disclosed wherein each R is a hydrocarbyl radical containing from 7 to 22 carbon atoms and is selected from the group consisting of alkyl, aryl, alkaryl, aralkyl, alkenyl, haloalkyl, haloaryl, haloalkaryl, haloaralkyl, haloalkenyl and nitroaryl groups. The compounds are useful as extreme pressure and anti-wear additives in lubricant compositions.

3,705,220
METHOD FOR CASTING MATERIAL USING A COLLAPSIBLE STRUCTURE
Fred L. Ecker, 1905 Liliano Place, Sierra Madre, Calif. 91024
Continuation-in-part of application Ser. No. 12,759, Feb. 19, 1970. This application June 30, 1971, Ser. No. 158,490
Int. Cl. E04g 13/02
U.S. Cl. 264—31 7 Claims

Apparatus for rigidly locking together a collapsible structure including an outer clamping structure having first and second interconnected sides. The sides are spaced apart and each side receives one of a pair of form sides to be clamped. The facing surfaces of the first and second sides each have a stop defining a plane against which the edges of one of the form sides may be positioned. The outer clamping structure has at least one opening therethrough intermediate the sides. A wedge is positioned for engagement on opposite sides of each of the form sides from the first and second sides of the outer clamping structure. A coupling member movably extends through the opening and has an end coupled to the inner clamping member. A retracting and lock member retracts the wedge toward the first and second sides to thereby wedge the pair of form sides therebetween.

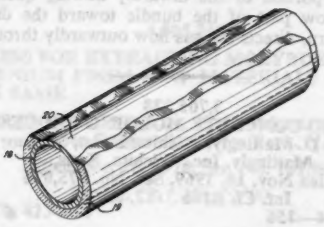


A method for constructing a concrete structure is disclosed utilizing a collapsible form which includes form sides and corner clamps, and assembled form clamps. Each corner clamp has a pair of interconnected and diverging side members, a wedge and a retracting lock member for drawing the wedge toward the side members. The steps comprise the following: Position the edges of at least two of such form sides in between the side members and wedge of at least one corner clamp. Actuate the retracting lock member of the corner clamp to draw the wedge thereof into engagement with the form sides thereby rigidly locking the form sides between the wedge and the side members to form a multi-sided form assembly. Affixing the assembled form clamps to the form assembly to thereby rigidly hold the form assembly in place while pouring liquid concrete therein. Position liquid concrete into the thus formed form assembly.

3,705,221
METHOD OF FOAM PIPE INSULATION WITH COATING OF DEFICIENT AREA AT TOP OF PIPE AFTER MOLD REMOVAL
Jimmy D. Lee, Houston, Tex., assignor to Plaskolite, Inc., Columbus, Ohio
Filed Sept. 14, 1970, Ser. No. 71,928
Int. Cl. B29d 27/04
U.S. Cl. 264—45 2 Claims

A method of insulating pipelines in the field with foamable insulating material is shown. It comprises pouring foamable polyurethane components into a mold, open at the top, positioned around the pipeline and spaced therefrom at a distance equal to the desired thickness of insulation. An insufficient amount of foam is used to

completely cover the pipe at the top to the desired thickness. The mold is removed from around the pipeline and



insulation of the substantially continuous deficient area at the top of the pipeline is completed by hand spraying.

3,705,222

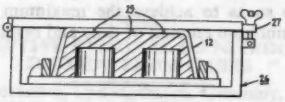
METHOD OF CASTING FOAM PLASTIC TO JOIN A RIGID SHELL AND THIN POLYMERIC SKIN

Frederic L. Rogers, Saint John, New Brunswick, Canada, and William W. Rogers, deceased, late of Saint John, New Brunswick, Canada, by Sarah M. Rogers, executrix, P.O. Box 2061, Station C, Saint John, New Brunswick, Canada

Continuation-in-part of application Ser. No. 499,191, Oct. 21, 1965. This application Sept. 19, 1969, Ser. No. 864,569

Int. Cl. B29d *27/04*

U.S. Cl. 264—45 **18 Claims**



A moulding process for producing an article including a cellular body having a thin protective plastic skin adhering to a first portion of the body surface with a preformed relatively hard protective shell adhering to substantially all of the remaining body surface. In the described process the cellular body is moulded while at the same time said plastic skin and said preformed shell are simultaneously bonded thereto with said preformed shell acting to contain and mould a portion of the cellular body during the molding operation. The protective skin and the shell structure are applied relative to the cellular body such that a relatively narrow band of the cellular material of said body separates the skin from contact with said shell thereby improving the insulating properties of the insulating article thus formed.

3,705,223

PRODUCING SINTERED ALUMINA FIBERS FROM AN ALUMINA SLIP OF VERY HIGH SOLIDS CONTENT

Alan Pearson, St. Louis, Mo., and John E. Marhanka, Belleville, Ill., assignors to Aluminum Company of America, Pittsburgh, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 781,979, Dec. 6, 1968. This application July 28, 1971, Ser. No. 166,967

Int. Cl. C04b *33/18, 35/10*

U.S. Cl. 264—56 **8 Claims**

Using dispersing agents, slips formed of a volatile fluid and containing 80 to 90% of discrete alpha alumina particles with a median diameter of 0.3 to 2.5 microns and having a viscosity above 5000 centipoise are made. The slip is then formed into threads in an evaporative environment to concurrently remove a portion or all of the liquid ingredient thus forming self supporting fibers which are then sintered.

3,705,224

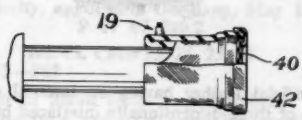
METHOD OF MAKING A JACK

Harry F. Neff, Medina, and Stephen C. Sabo, Barberton, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed July 6, 1971, Ser. No. 159,945

Int. Cl. B29c *17/07;* B29h *7/03*

U.S. Cl. 264—96 **7 Claims**



A method for making an inflatable pneumatic bag jack made in the form of a cylindrical bag of impervious flexible material of a diameter several times its axial collapsed length wherein annular corrugations are in the flat end faces immediately inside the periphery.

3,705,225

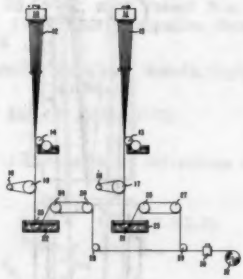
PROCESS FOR PREPARING SILK-LIKE POLYESTER YARN

Robert Edward Taylor, Camden, S.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Application Oct. 28, 1969, Ser. No. 871,418, now Patent No. 3,608,296, which is a continuation-in-part of application Ser. No. 564,905, July 13, 1966, now abandoned. Divided and this application June 1, 1971, Ser. No. 148,701

Int. Cl. D01f *1/00;* D02g *1/20*

U.S. Cl. 264—103 **3 Claims**

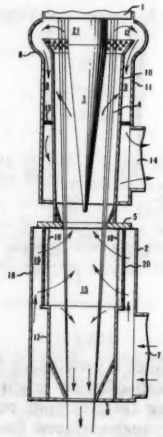


A silk-like appearance is provided in fabric by polyester yarn prepared by melt-spinning bright polymer containing surface-modifying agent through non-round spinneret orifices to produce rough-surfaced filaments of different cross-sections, and drawing the filaments to 0.75–1.5 denier with a part being subjected to conditions different from other filaments to impart differential shrinkability. Alternatively a different polymer composition is used in part of the filaments to impart differential shrinkability.

3,705,226
ARTIFICIAL LEATHER AND A METHOD OF MANUFACTURING THE SAME
Miyoshi Okamoto, Takatsuki, and Shunji Mizuguchi and Koji Watanabe, Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed June 30, 1970, Ser. No. 51,038
Claims priority, application Japan, July 9, 1969, 44/53,754, 44/53,755
Int. Cl. B29d *27/00*; D04h *1/64*
U.S. Cl. 264—162 11 Claims

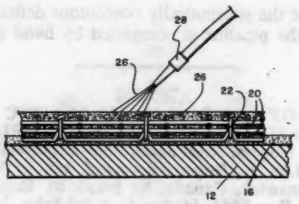
An artificial leather having an internal configuration made up of three dimensionally interlaced bundles of extremely fine synthetic fibers sandwiched by a high polymeric substance layer of suede touch and raised surface of velours touch, and a method of manufacturing such leather from one or more webby masses of islands-sea-combination type filamentary fibers through application of needle punching, impregnation with temporary binder, removal of the sea component, impregnation with elastic substance, removal of the temporary binder, formation of the additional synthetic surface layer and raising of one surface of the thus obtained fibrous sheet.

3,705,227
PROCESS AND APPARATUS FOR QUENCHING MELT SPUN FILAMENTS
William Achard Fintel, Donelson, Harold Hubbard Heighton, Mount Juliet, and John Guise Rossman, Jr., Hendersonville, Tenn., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Jan. 13, 1971, Ser. No. 106,023
Int. Cl. B28b *3/20*; B29c *25/00*
U.S. Cl. 264—176 F 8 Claims



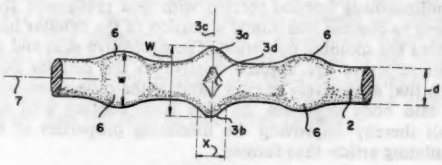
An improved radial quench process for filaments being extruded in the form of hollow bundles wherein the radial chimney is spaced from the spinneret and a tapered deflector extends from the spinneret downwardly in the hollow part of the bundle terminating above the chimney. Gas flow restrictors at each end of the chimney are sized to direct a portion of the inwardly flowing quench gas up the hollow part of the bundle toward the deflector which, in turn, directs the gas flow outwardly through the bundle.

3,705,228
FERRO-CONCRETE MOLDING PROCESS
Charles D. Mattingly, Wichita, Kans., assignor to Mattingly, Inc., Wichita, Kans.
Filed Nov. 10, 1969, Ser. No. 875,076
Int. Cl. B28b *1/32, 23/02*
U.S. Cl. 264—256 6 Claims



This invention is a molding process utilizing the combination of layers of reinforcing material and concrete to achieve a new and novel ferro-concrete product. More particularly, this invention is a molding process for creating ferro-concrete structures in a manner whereupon the reinforcing material is easily and effectively anchored in a compact manner before applying the concrete material thereto so as to achieve the maximum strength requiring a minimum amount of time and resultant material thickness.

3,705,229
METHOD OF MAKING A SLIDE-FASTENER COUPLING ELEMENT
Helmut Heimberger, Burgackerweg 8, D-7887 Grenzach, Germany
Filed April 4, 1970, Ser. No. 33,031
Int. Cl. B29d *5/00*
U.S. Cl. 264—281 5 Claims



A method of making a slide-fastener coupling element from a synthetic-resin monofilament which comprises deforming the monofilament at spaced locations to provide a pair of shank bulges on opposite sides and spaced from each coupling-head bulge and coiling the monofilament to produce a multiplicity of turns each with a coupling head whose projections extend laterally of the plane of the turns and whose bulges are set back from the coupling units and are juxtaposed so that an eye is defined by each turn for receiving the coupling-head projection of the turn of another coupling element. Hence the two bulges of each turn flank the coupling head of the turn of an opposing coupling element, while each coupling head is flanked by the two bulges of a mating turn.

ERRATA

For Classes 423—471 thru 423—502 see: Patents Nos. 3,705,007 thru 3,705,010

3,705,230

PROCESS FOR EXTRACTING MOLYBDENUM AND RHENIUM FROM RAW MATERIALS CONTAINING SAME

Jack M. Noy, Salt Lake City, Utah, assignor to Kennecott Copper Corporation, New York, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,903

Int. Cl. C22b *59/00*

U.S. Cl. 423—50 **10 Claims**

A process for extracting molybdenum and rhenium values from molybdenum and rhenium-bearing materials including the steps of roasting such a material in the presence of a calcium compound, such as burnt lime, CaO, to produce a calcine containing calcium molybdate, $CaMoO_4$, and calcium perrhenate, $Ca(ReO_4)_2$. The calcine is leached with acid at pH 1.0 or less, resulting in a solution containing dissolved molybdenum and rhenium values. Alternatively, the calcium calcine is leached with water, and the resulting slurry is subjected to leaching by acid. The solution is filtered and washed to remove insoluble residue and is then treated by means known in the art to separate and recover the molybdenum and rhenium values from the filtrate. Suitable recovery means include the use of extraction and stripping cells and ion exchange resins as described in U.S. Pat. No. 3,458,277 to Platzke, et al., and U.S. Pat. No. 2,876,065 to Zimmerley, et al.

3,705,231

SELECTIVE REMOVAL OF NITROGEN DIOXIDE FROM GASES

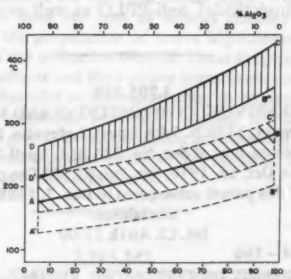
Gerhard Biberacher, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed July 21, 1970, Ser. No. 56,767

Claims priority, application Germany, July 24, 1969, P 19 37 552.1

Int. Cl. C01b *21/20*

U.S. Cl. 423—239 **4 Claims**



Nitrogen dioxide is selectively removed from gases which contain not only nitrogen dioxide in strongly diluted form but also oxygen by reaction with carbon monoxide at elevated temperatures in the presence of supported catalysts of platinum and/or palladium. The reaction takes place at temperatures of from 130° to 425° C. and the carrier used is α-aluminum oxide or silicon dioxide. The ratio of these oxides to one another is chosen in accordance with the predetermined temperature.

3,705,232

PROCESS FOR THE MANUFACTURE OF ALKALI METAL POLYPHOSPHATES

Fritz Krahl, Efferen, near Cologne, Dieter Hammel, Ladenburg, Gero Heymer, Knapsack, near Cologne, and Heinz Harnisch, Lovenich, near Cologne, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed May 5, 1969, Ser. No. 822,006

Claims priority, application Germany, May 16, 1968, P 17 67 500.2

Int. Cl. C01b *25/28, 25/30*

U.S. Cl. 423—312 **5 Claims**

Production of alkali metal polyphosphates from elementary phosphorus, and alkali metal hydroxide or alkali metal carbonate, which may be used solid and/or dissolved, and a free oxygen-containing gas. The alkali metal hydroxide or the alkali metal carbonate is atomized in a reaction zone, directly into or in the immediate vicinity of a flame produced by burning liquid phosphorus, molten reaction product is removed from the reaction zone, gas issuing from the reaction zone is supplied to a gas scrubbing zone, and aqueous scrubbing solution is recycled to the reaction zone. The aqueous scrubbing solution is freed, prior to recycling it to the reaction zone, from arsenic contained in the volatile issuing gas by treatment with an alkali metal sulfide or hydrogen sulfide, and recycled to the reaction zone in a quantity sufficient to produce therein a steam partial pressure of more than 450 mm. mercury.

3,705,233

PHENYLAMINOETHANOL DERIVATIVES

Lawrence Henry Charles Lunts and Paul Toon, London, England, assignors to Allen & Hanburys Limited, London, England

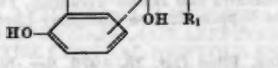
No Drawing. Continuation-in-part of application Ser. No. 669,263, Sept. 20, 1967, now Patent No. 3,644,353, dated Feb. 22, 1972. This application June 2, 1971, Ser. No. 149,356

Claims priority, application Great Britain, Sept. 23, 1966, 42,590/66

Int. Cl. A61k *27/00*

U.S. Cl. 424—45 **10 Claims**

Novel 1-phenyl-2-aminoethanol derivatives of the formula:



are disclosed, some of which have stimulant action and some of which have blocking action of β-adrenergic receptors.

In particular pharmaceutical compositions comprising a compound selected from α¹-t-butylaminomethyl-4-hydroxy-m-xylene-α¹-α³-diol, 4 - hydroxy-α¹{[(p-methoxy-α-methylphenethyl)amino]-methyl} - m - xylene - α¹,α³-diol and physiologically acceptable acid addition salts thereof, in association with a pharmaceutically-acceptable carrier

are disclosed, the composition being preferably in dosage unit form. Also a method of treating a patient suffering from bronchospasm which comprises administering an effective amount of a compound specified.

3,705,234

SKIN-PROTECTIVE SUN-SCREENING COMPOSITION AND METHOD

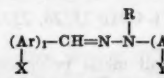
Sigmund C. Catino, Castleton, and Albert F. Strobel, Delmar, N.Y., assignors to GAF Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 517,443, Dec. 29, 1965. This application Apr. 1, 1969, Ser. No. 812,382

Int. Cl. A61l *23/00*

U.S. Cl. 424—60 **8 Claims**

Novel sun-screening agents of the formula:



wherein $(Ar)_1$ and $(Ar)_2$ represent benzene rings; X and Y represent a member selected from hydrogen, and a carboxylic or sulfonic acid salt-forming cation, at least one of X and Y being other than hydrogen; and R represents an aliphatic radical, preferably a lower alkyl radical. Such compounds are useful as sun-screening agents as they absorb ultraviolet light in the region of from about 2900 A. to about 3500 A. Pharmaceutical compositions including a pharmaceutically acceptable carrier and the above sun-screening agents are effective compositions to screen out both the burning and tanning rays of the sun so as to provide excellent sun-screening protection.

3,705,235

SANITIZING PLASTIC MATERIAL

Robert H. McIntosh and Ezekiel H. Hull, Greensboro, N.C., assignors to Predicted Environments, Inc., Atlanta, Ga.

No Drawing. Filed Apr. 30, 1971, Ser. No. 139,265

Int. Cl. A61l *13/00*

U.S. Cl. 424—83 **4 Claims**

An effective amount of nonionic trialkylamine and optionally one of a Group II–A or Group II–B metal salt of a monocarboxylic acid having a carbon chain length of 1 to 4, cadmium chloride, or ethylenediaminetetraacetic acid when dispersed in a thermoplastic resin is an effective and long lasting fungicidal and bactericidal agent which is effective against both Gram-positive and Gram-negative organisms including *Pseudomonas aeruginosa.*

3,705,236

METHOD OF PRODUCING CARBON FIBERS

Toshikatsu Ishikawa and Haruo Teranishi, Tokyo, Japan, assignors to Nippon Carbon Company Limited, Tokyo, Japan

No Drawing. Filed Oct. 28, 1970, Ser. No. 84,890

Claims priority, application Japan, Nov. 1, 1969, 44/87,335

Int. Cl. C09b *31/07*

U.S. Cl. 423—447 **3 Claims**

A method is provided for producing carbon fibers having a tensile strength of more than 150 kg./mm.^{2} and a Young's modulus of more than 32,000 kg./mm.^{2} by applying a vibrational energy to organic fibers under a tension in at least one of a drawing step for obtaining the precursor suitable for the production of carbon fibers, a pretreatment step for facilitating carbonization of the precursor, a carbonization step for substantially carbonizing the precursor and a graphitization step for graphitizing the carbonized fibers and for improving Young's modulus.

3,705,237

ANTIBIOTIC SUBSTANCE AND PROCESS FOR THE EXTRACTION OF SUCH AN ANTIBIOTIC SUBSTANCE FROM A NEW STRAIN OF PSEUDOMONAS

Robert Grandpierre, Bourg-la-Reine, and Alexandre Robert, Albon, France, assignors to Albert Rolland S.A., Paris, France

Filed July 17, 1970, Ser. No. 55,785

Int. Cl. C12d *9/20*

U.S. Cl. 424—115 **12 Claims**

An antibiotic, active against gram positive and gram negative organisms, is obtained from a new strain, *Pseudomonas rollandi* CBS 368.68 which has been cultured aerobically at 12–42° C. for a sufficient time to achieve the stationary growth phase. The resulting Pseudomonas is ground and dehydrated and the antibiotic extracted with methanol.

3,705,238

ANTIBIOTICS A204I AND A204II AND METHOD FOR PRODUCTION THEREOF

Robert L. Hamill, New Ross, and Marvin M. Hoehn, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of application Ser. No. 850,602, Aug. 15, 1969, which is a continuation-in-part of application Ser. No. 801,215, Dec. 6, 1968, which in turn is a continuation-in-part of application Ser. No. 707,841, Feb. 23, 1968, all now abandoned. This application Sept. 14, 1970, Ser. No. 71,965

Int. Cl. A61k *21/00*

U.S. Cl. 424—121 **10 Claims**

Antibiotics A204I and A204II are co-produced by culturing *Streptomyces albus* NRRL 3384 in an aqueous, nutrient culture medium and are isolated as antibiotic A204 mixture via ethyl acetate extraction of filtered broth and mycelium followed by purification over activated carbon. Chromatography of A204 mixture affords separation of A204I and A204II as individual antibiotics having anticoccidial, insecticidal, anti-PPLO as well as antimicrobial activity.

3,705,239

PAIN REMOVING COMPOSITIONS AND METHODS

Roy B. Gregory, 1130 N. 14th Street, Lafayette, Ind.

Continuation-in-part of Ser. No. 820,311, April 29, 1969. This application Oct. 16, 1970, Ser. No. 81,555The portion of the term of this patent subsequent to Dec. 7, 1988, has been disclaimed.

Int. Cl. A61k *27/00*

U.S. Cl. 424—166 **4 Claims**

Pain removing compositions for external use on warm blooded animals. A pain removing composition is made from acetic acid, urea, ammonium hydroxide, glycerol, and water and may be used with plastiquinone A in a solvent. A binder may be used to tie the components together. A binder contains lanolin, stearic acid, water, triethanolamine and mineral oil. When rubbed on an external part of an affected area of a warm blooded animal, pain is removed in a short period of time.

3,705,240

PHOSPHORIC ACID ESTERS, INTERMEDIATES FOR MAKING THE SAME, AND PEST CONTROL BY MEANS OF SAID ESTERS

Beat Bohner and Kurt Rufenacht, Basel, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Original application Nov. 17, 1967, Ser. No. 683,784, now Patent No. 3,600,474, dated Aug. 17, 1971. Divided and this application Apr. 28, 1971, Ser. No. 50,005

Claims priority, application Switzerland, Nov. 21, 1966, 16,667/66

Int. Cl. C07f 9/08

U.S. Cl. 424—203 4 Claims

New phosphoric acid esters which contain as esterifying radical a cyclobutenol radical which is fused to a ring system are produced from novel intermediates which are α-halogeno-cyclobutanones fused to a ring system. The new esters are useful as pesticides; a method of controlling pests with the aid of the new compounds as well as pesticidal compositions containing them as active ingredients are also described.

3,705,241

FUNGICIDAL PROCESS EMPLOYING ORGANIC PHOSPHOROUS ACID ESTERS

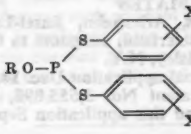
Gerhard Schrader, Kohlfurther Strasse 75, 56 Wuppertal-Cronenberg; Hans Scheinpflug, Nauener Strasse 5, 509 Leverkusen-Fettehenne, both of Germany; Herbert F. Jung, 5-14, Sekiguchi 2-chome, Bunkyo-ku, Tokyo; Shimpei Kuyama, 3-2-39, Nishi-Azabu, Minato-ku, Tokyo; Shigeo Kishino, 3-13-22, Naka-machi, Machida-shi, Tokyo, and Yasuo Yamada, 2257, Hirayama, Hino-shi, Tokyo, all of Japan

Continuation of Ser. No. 686,278, Nov. 28, 1967, abandoned. This application Oct. 20, 1970, Ser. No. 82,528

Int. Cl. A01n 9/36

U.S. Cl. 424—223 16 Claims

Agricultural and horticultural fungicides of the formula



wherein R is selected from the group consisting of C1–4 alkyl and chloroethyl, X is selected from the group consisting of chlorine and methyl and *n* is zero or one are especially useful for the control of the blast and sheath blight, which have been regarded from the past as serious diseases of rice, processes for the preparation of active ingredients thereof and method of the utilization thereof. These fungicides have good control effects and their active ingredients contain no heavy metals harmful to men and cattle, in contrast to the conventional fungicides heretofore applied for the same purpose which give such bad influence as direct and indirect toxicity to men and cattle owing to the presence of heavy metals such as mercury and arsenic.

3,705,242

ADAMANTYLAMINO (AND PIPERAZINO) - 5,11-DIHYDRODIBENZO[b,e][1,4]THIAZEPINES AND METHOD OF USING

Harry Louis Yale, New Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,101

Int. Cl. A61u 27/00

U.S. Cl. 424—250 4 Claims

Adamantylamino (or piperazino)-5,11-dihydrodibenzo [b,e][1,4]thiazepines are provided which have been found to have an inhibitory effect on DNA synthesis as well as central nervous system stimulant activity and therefore are useful as anti-depressants. In addition, a method is provided for treating depression by administering the above-mentioned compounds as well as the corresponding adamantylamino (or piperazino)-5,11-dihydrodibenz [b,e][1,4]oxazepines.

3,705,243

ANTIBACTERIAL COMPOSITION

Shozo Nakazawa, Kyoto, and Osamu Ikeda, Tokyo, Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

Filed June 4, 1970, Ser. No. 43,396

Claims priority, application Japan, June 4, 1969, 44/43,230

Int. Cl. A61k 27/00

U.S. Cl. 424—250 8 Claims

An antibacterial composition containing from 0.5 to 10 parts by weight nalidixic acid per part by weight of rifampicin shows synergistically enhanced antibacterial activity while greatly reducing development of drug tolerance by the organisms being treated.

3,705,244

AMINO ALCOHOLS IN COMPOSITIONS HAVING BRONCHIAL SPASMOLYTIC ACTIVITY

Roland-Yves Mauvernay, Rte. de Marsat, 63 Riom, France, and Norbert Busch, Riom, France; said Busch assignor to said Mauvernay

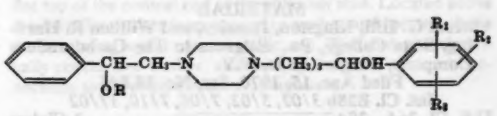
No Drawing. Continuation-in-part of abandoned application Ser. No. 654,028, June 22, 1967. This application Feb. 9, 1971, Ser. No. 114,026

Claims priority, application Great Britain, June 27, 1966, 28,801/66

Int. Cl. A61k 27/00

U.S. Cl. 424—250 10 Claims

Compositions for the treatment of bronchitis and asthma comprising aminoalcohols of the formula:



wherein R is a lower alkyl radical, R_1, R_2 and R_3 are independently selected from the group consisting of a hydrogen atom, a halogen atom, an alkyl radical, an alkoxy radical, an alkenyloxy radical, and a 2-amino-alkoxy radical. The compositions are in the form of injectable ampoules, tablets, suppositories or aerosols.

3,705,245

7-AMINO - 2-CHLORO-11-(4-METHYL-1-PIPERAZINYL)DIBENZ[b,f][1,4]OXAZEPINES ACTING ON THE CENTRAL NERVOUS SYSTEM

Charles Frederick Howell, Upper Saddle River, N.J., and Eugene Newton Greenblatt, Spring Valley, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 84,221, Oct. 26, 1970, now Patent No. 3,660,406, dated May 2, 1972. This application Jan. 24, 1972, Ser. No. 220,371

Int. Cl. A61k 27/00

U.S. Cl. 424—250 2 Claims

Preparation of 7-amino-2-chloro-11-(4-methyl-1-piperazinyl)dibenz[b,f][1,4]oxazepine and pharmaceutically

acceptable acid addition salts by several methods is described. These compounds are useful for their effects on the central nervous system such as tranquilizers and antidepressants.

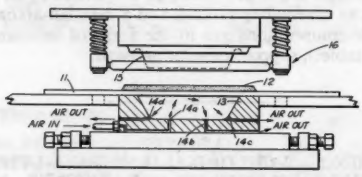
3,705,246
ANTI-DERMATOPHYTOSIC COMPOSITION AND METHOD OF USE
Togo Yamano, Yamatotakada, Teruji Henmi, Amagasaki, Yoshiro Usui, Ibaraki, Etsunosuke Noda, Yao, and Masayuki Yamada, Kawanishi, Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan
No Drawing. Filed Mar. 26, 1969, Ser. No. 810,801
Claims priority, application Japan, Mar. 26, 1968, 43/19,590
Int. Cl. A61k 27/00
U.S. Cl. 424—270 9 Claims

The present invention relates to a method for treating dermatophytosis by applying to the region of dermatophytosis the compound 3-(p-methylbenzylideneamino)-4-phenylthiazoline-2-thione as the active ingredient. The present invention also provides for compositions prepared from the aforementioned active ingredient.

3,705,247
METHOD OF CONTROLLING NEMATODES
Herman Breuer, Regensburg, Germany, assignor to E. R. Squibb & Sons, Inc., New York, N.Y.
No Drawing. Original application July 24, 1968, Ser. No. 747,103, now Patent No. 3,575,997. Divided and this application June 5, 1970, Ser. No. 57,390
Int. Cl. A01n 9/28
U.S. Cl. 424—272 2 Claims

3-amino-5-n-undecyl-1,2,4-oxadiazole and salts thereof and methods for their use as nematocides and aquatic herbicides.

3,705,248
MOLDING OF POWDERED OR GRANULAR MATERIAL
Vincent G. Hill, Kingston, Jamaica, and William R. Harding, State College, Pa., assignors to The Carborundum Company, Niagara Falls, N.Y.
Filed Apr. 15, 1970, Ser. No. 28,845
Int. Cl. B28b 3/02, 5/02, 7/06, 7/10, 17/02
U.S. Cl. 264—294 3 Claims



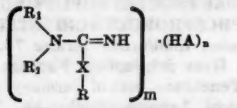
Shaped articles (e.g., ceramic dishes) are molded from a moldable raw mix with a press which utilizes a separable rubber sheet within the female die. The rubber sheet (1) supports the mix to be molded; (2) distributes pressure uniformly during molding; and (3) releases the molded part from the female die after molding. The rubber sheet advantageously forms part of a conveyor belt. The use of a female die which is itself rubber, in addition to the rubber sheet, aids in pressure distribution during molding.

3,705,249
COMPOSITIONS AND METHODS FOR TREATING AMOEBIC AND BACTERIAL INTESTINAL INFECTIONS
Erika Bohni, Basel, Rudolf Ruegg, Bottmingen, and Gottlieb Ryser, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Filed July 16, 1971, Ser. No. 163,442
Claims priority, application Switzerland, July 24, 1970, 11,237/70
Int. Cl. A61k 27/00
U.S. Cl. 424—274 5 Claims

Compositions therapeutically useful as amoebicides and intestinal antispetics and containing as the active ingredient 1-methyl-4-nitro - pyrrole-2-aldehyde thiosemicarbazone are described.

3,705,250
PSEUDOTHIOUREAS AND SALTS THEREOF AS VIRUCIDES
Charles Frank Hinz, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Dec. 3, 1969, Ser. No. 881,848
Int. Cl. A01n 9/12, 9/20
U.S. Cl. 424—322 3 Claims

A method of inactivating lipophilic viruses by contacting the virus with a compound of the formula:



wherein X is sulfur or oxygen, R is a straight chain aliphatic hydrocarbon radical of 8 to 18 carbon atoms, R_1 and R_2 are individually hydrogen or methyl, HA is an anionic salt forming group, n is 0 or 1, m is 1 when n is 0, and m is an integer of 1 to 3 when n is 1 depending on the number of protons of HA partaking in salt formation.

3,705,251
FUNGICIDAL USE OF CYCLOALKYL-N-[OCTAHYDRO - 1,2,4 - METHENOPENTALENYL - (5)] OXIME-CARBAMATES
Claus Dieter Weis, Arlesheim, Basel-Land, and Karl Gatzi, Basel, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.
No Drawing. Original application Dec. 18, 1967, Ser. No. 691,135, now Patent No. 3,555,092, dated Jan. 12, 1971. Divided and this application Sept. 4, 1970, Ser. No. 69,889
Int. Cl. A01n 9/20
U.S. Cl. 424—327 4 Claims

Certain oxime N-[octahydro-1,2,4-methenopentalenyl-(5)]-carbamates are disclosed as fungicides; compositions containing these carbamates as fungicidal agents and methods of controlling fungi therewith are also described.

3,705,252
2,2'-DICHLORODIISOPROPYL ETHER AS A NEMATOCIDE
Shizuo Ohga, 699, 3-chome, Amanuma, Suginami-ku, Tokyo; Hideatsu Yasutomi, 444, Shinohara-cho, Kohoku-ku, Yokohama, and Masuo Fujita, 604, Kitamikata-aza-Mukovgawarakochi, Kawasaki-shi, all of Japan
Continuation of Ser. No. 408,466, Oct. 30, 1964, abandoned. This application March 27, 1968, Ser. No. 721,549
Claims priority, application Japan, Nov. 6, 1963, 38/59334
Int. Cl. A01n 9/24
U.S. Cl. 424—342 1 Claim

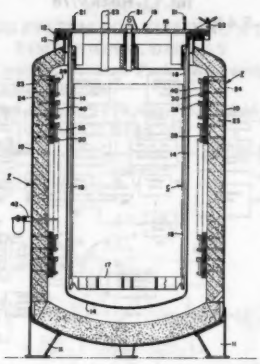
A novel nematocide containing as the effective component, 2,2'-dichlorodiisopropyl ether. The invention also includes the process of destroying nematodes by applying to the sites thereof, an effective amount of 2,2'-dichlorodiisopropyl ether. A preferred embodiment of the invention includes the use of 1,2-dichloropropane together with the 2,2'-dichlorodiisopropyl ether as the nematocide.

ELECTRICAL

3,705,253
FURNACE WALL CONSTRUCTION

Gerald W. Hicks, Elyria, Ohio, assignor to Lee Wilson Engineering Company, Inc., Cleveland, Ohio

Filed Sept. 2, 1971, Ser. No. 177,408
Int. Cl. H05b *3/06*
U.S. Cl. 13—20 **6 Claims**

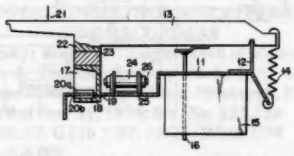


An efficient and inexpensive wall construction is provided for an electric furnace of the resistance type in which breakage is minimized and parts are easily replaced if breakage does occur. The furnace lining extends over the inside wall of the furnace and includes ceramic panels designed to receive and support electrical resistance elements, such as resistor ribbon or the like. In one form the lining comprises a layer of fibrous ceramic insulating material which is supported on the inside of a furnace outer wall or shell. Headed fastener studs extend through the insulating material and are secured to the furnace shell with their heads spaced therefrom. The ceramic heating element support panels are removably mounted on the fastener studs and held in place by the headed ends thereof. In a preferred form of the construction the ceramic panels are disposed in horizontal rows whereby the panels of one row rest on and are partially supported by the panels of the row below.

3,705,254
KEY OPERATING DEVICE FOR AN ELECTRONIC MUSICAL INSTRUMENT

Hiroshi Amano, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed April 10, 1970, Ser. No. 27,407
Claims priority, application Japan, April 15, 1969, 44/28859; April 15, 1969, 44/34150; April 17, 1969, 44/34933; April 23, 1969, 44/37268; April 23, 1969, 44/37269; April 24, 1969, 44/36969; May 26, 1969, 44/48260; Aug. 25, 1969, 44/80112; Aug. 27, 1969, 44/80768
Int. Cl. G10h *3/08*
U.S. Cl. 84—1.1 **24 Claims**

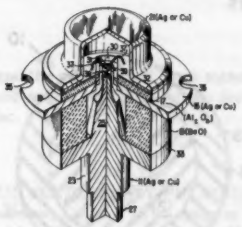


A key operating device for a keyboard electronic musical instrument comprising means for generating an electric pulse which varies in proportion to the force or the speed which is used in depressing a given key among a plurality of keys constituting the keyboard so as to vary the volume of the resulting musical tone according to the magnitude of the depressing force, means for rectifying the pulse voltage obtained by said means and means for varying the voltage level of output signals from a tone signal generator corresponding to the depressed key using the D.C. voltage obtained by the rectifier.

3,705,255
HERMETICALLY SEALED SEMICONDUCTOR

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of, and David S. Jacobson, Plainfield, N.J.

Filed Oct. 27, 1970, Ser. No. 84,289
Int. Cl. H05k *5/00*
U.S. Cl. 174—52 S **6 Claims**

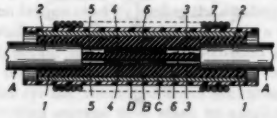


A hermetically sealed coaxial package suitable for housing microwave semiconductor components is described. The package comprises a collector stud having a flange intermediate the ends of the stud. One end of the stud is generally conically formed and has a flat top or plateau upon which the semiconductor component is mounted. An insulating ring is mounted on one surface of the flange around the conical end of the stud. An electrically conductive washer is mounted on the other side of the insulating ring so that it is adjacent the flat top of the conical end of the collector stud. Located above the metallic washer is an insulating washer and located above the insulating washer is a metallic cap. The stud, the electrically conductive washer, and the cap form the external connections to the semiconductor component.

3,705,256
ARRANGEMENT IN JOINING ELECTRIC INSULATED MULTI-CORE CABLES

Bard Eftestol, and Tor Osteng, both of Raufoss, Norway, assignors to A/S Raufoss Ammunisjonsfabrikken, Raufoss, Norway

Filed Dec. 1, 1970, Ser. No. 94,098
Claims priority, application Norway, Dec. 2, 1969, 4753/69
Int. Cl. E02g *15/08*
U.S. Cl. 174—88 R **1 Claim**



The present invention relates to an arrangement in joining insulated electric multi-core cable comprising a connecting tube of an elastomeric material, a metal tube enclosing said tube, an axial bore having a diameter corresponding to the

outer diameter of the cable to be joined extending from each end of the connecting tube to a selected depth from said end, a number of axial parallel bores connecting said end bores and adapted to receive the respective insulated phase conductors, a centrally positioned copper tube in each of said parallel bores adapted to receive adjacent exposed ends of said conductors, the arrangement being such that when said metal tube is compressed the connecting tube is compressed around the end parts of the cable and around the copper tubes pinching same around said conductors procuring a mechanical and electrical effective joint protected against intrusion of moisture.

3,705,257

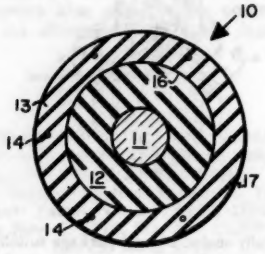
ELECTRIC CABLE AND METHOD OF MAKING

Robert M. Wade, Wabash, Ind., assignor to Anaconda Wire and Cable Company, New York, N.Y.

Filed March 6, 1972, Ser. No. 231,840

Int. Cl. H01b *7/02, 9/02*

U.S. Cl. 174—115 **24 Claims**



In an electric cable having a semiconducting jacket applied directly over a wall of polymeric insulation, excessive bonding of the jacket to the insulation is prevented by applying the curing agent for the jacket only to its outer surface after extrusion, and then effecting a vulcanization such that the inner jacket surface remains thermoplastic.

3,705,258

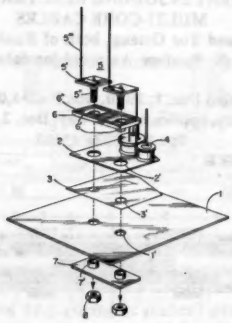
ELECTRICAL TERMINAL STRUCTURE

Floyd M. Minks, Route 1, Box 66, Kissimmee, Fla.

Filed Dec. 23, 1971, Ser. No. 211,571

Int. Cl. H01b *17/26;* **H02b** *1/02*

U.S. Cl. 174—153 R **6 Claims**



This disclosure is concerned with a novel electrical terminal structure embodying insulative clamping members having cooperative interlocking tubular extensions securing a thin housing or similar support wall and a component-mounting heat-sink plate sandwiched therebetween, and with the upper clamping member being provided with recess means for receiving and locking therein the head of a terminal post passed through the tubular members.

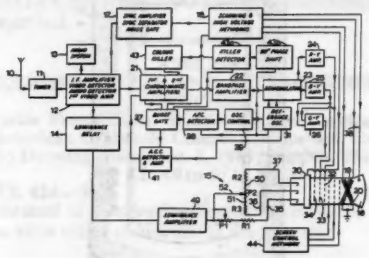
3,705,259

NETWORKS FOR SETTING UP AND ADJUSTING THE COLOR TEMPERATURE OF THE PICTURE REPRODUCED BY THE PICTURE TUBE OF A COLOR TELEVISION RECEIVER, assignor to John D. Lovely, Waterloo, Ontario, Canada and Electrohome Limited, Kitchener, Ontario, Canada

Continuation-in-part of Ser. No. 43,471, June 4, 1970, abandoned. This application Sept. 2, 1971, Ser. No. 177,412

Int. Cl. H04n *9/16*

U.S. Cl. 178—5.4 R **13 Claims**



A simple network for setting up and adjusting the color temperature of the picture reproduced by the picture tube of a color television receiver and which requires that only one control be brought out to a location where it is accessible to a customer or serviceman includes a variable resistor directly connected in circuit with one of the "red" and "green" electron guns of the picture tube for varying the strength of the signal translated by the luminance signal channel of the receiver and applied to the gun without varying any D.C. potential of the gun. Another variable resistor is directly connected in circuit with the other two guns of the picture tube and varies simultaneously but in opposite directions the strength of the signal translated by the luminance signal channel and applied to the two guns without varying any D.C. potential thereof.

3,705,260

VIDEO SIGNAL CONTROL CIRCUIT FOR COLOR TELEVISION

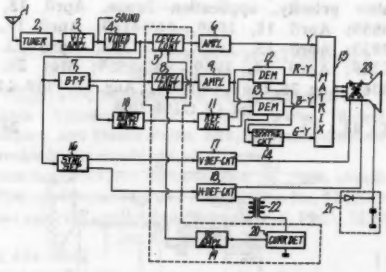
Takashi Okada, Yamato, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 19, 1971, Ser. No. 173,104

Claims priority, application Japan, Aug. 21, 1970, 45/73354

Int. Cl. H04n *9/48*

U.S. Cl. 178—5.4 R **9 Claims**



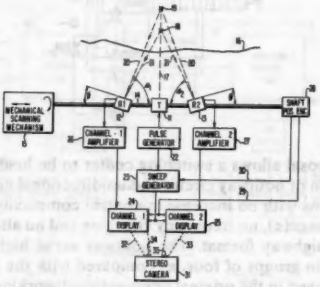
In a color television receiver in which a luminance signal and a chrominance signal are separated from a composite color video signal for amplification and color demodulation and then both of the luminance and chrominance signals are supplied to a color cathode ray tube to produce color images on the screen of the tube, a signal control circuit arrangement

for changing the levels of the chrominance and luminance signals simultaneously without varying the pedestal level in response to the brightness of the color images on the screen, thereby to ensure faithful reproduction of color images on the screen of the color cathode ray tube.

3,705,261
SCANNING SYSTEM FOR YIELDING A THREE-DIMENSIONAL DISPLAY

Lawrence W. Langley, Severna Park, Md., assignor to Symbionics, Inc., Annapolis, Md.

Filed April 9, 1970, Ser. No. 26,846
Int. Cl. H04n *7/02*
U.S. Cl. 178—6.5 **31 Claims**



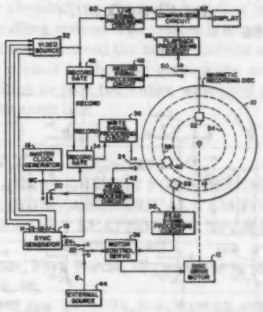
A system for scanning an object and obtaining a three-dimensional display of the features of the object is described. Internal discontinuities within the scanned object can be detected and visually displayed. The system includes a transmitting element which transmits energy to the object under investigation. The energy transmitted to the object can be of a form which will pass through the object, for example, ultrasonic waves to obtain a view of internal features. Energy passing through the object is reflected back to the surface through which it entered the object by discontinuities within the object. The reflected waves are received by the scanning device where they are divided into separate channels. The two channels individually process the received signals which are then used to actuate a read-out device such as an oscilloscope. The visual read-out from the oscilloscope is then photographed by use of a stereo camera and a three-dimensional picture is obtained.

3,705,262
SYNCHRONIZATION METHOD AND APPARATUS FOR DISC RECORDERS

Paul G. Kennedy; Rodney N. Zeigler, both of Monroeville, Pa., and Daniel J. Provine, Severna Park, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 31, 1970, Ser. No. 103,220
Int. Cl. G11b *5/82, 19/28;* **H04n** *5/78*
U.S. Cl. 178—6.6 DD **4 Claims**

A method and apparatus for synchronizing a video source, such as a television camera, with a recording disc wherein prerecorded clock signals are provided on the disc on a first track and master clock signals are recorded on a second track with the recorded master clock signals being utilized in the generation of drive and synchronizing signals for the video source so that the video source and the disc are directly

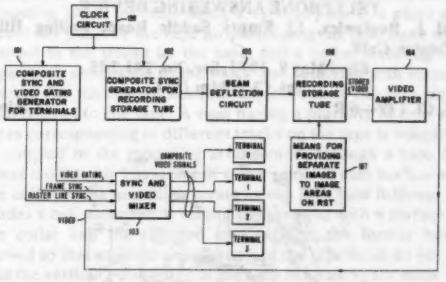


synchronized and the prerecorded clock signals are compared with an external source of clock signals for controlling the speed of the disc.

3,705,263
SCAN CONVERTER MULTIPLEXING SYSTEM

Larry E. Rittenhouse, Carmel, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,487
Int. Cl. H04n *5/02*
U.S. Cl. 178—6.8 **6 Claims**

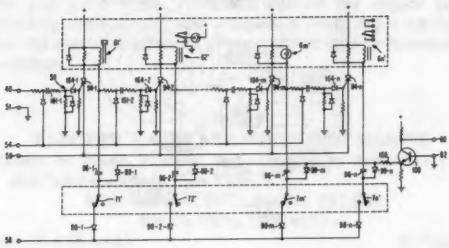


In the disclosed system, the storage screen of a scan converter or a recording storage tube is divided into a plurality of image areas such as four quadrants, for example. In each of these quadrants, there are written on the screen respective different images which are destined for four terminals. The storage screen is then read by having the reading beam therein sweep the total width of the storage screen in a raster scan. A spatial multiplexing arrangement is provided to transmit to each of the terminals the respective images to be received thereby. In this system, therefore, there is enabled the efficient use of a recording storage tube since its employment can be shared by a plurality of terminals. In an embodiment of the invention, the sync signals for the reading beam in the recording storage tube and those for the terminals can be so arranged whereby two raster lines are provided for each terminal for one raster line in the recording storage tube. Where a non-interlaced scan is employed in the terminals, then two fields are utilized per frame. However, where an interlaced scan is provided in the terminals, then four fields are utilized per frame.

3,705,264
REMOTE DIGITAL DATA TERMINAL CIRCUITRY

Jerome Danforth Harr, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed March 9, 1971, Ser. No. 122,392
Int. Cl. H03k *23/24*
U.S. Cl. 178—88 12 Claims

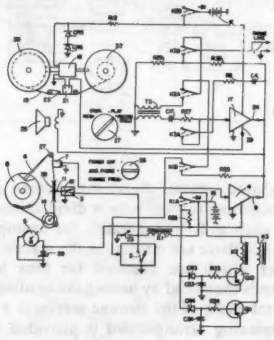


A digital data terminal operating from a two-wire transmission line is arranged for transmitting digital data on the same transmission line in the opposite direction. A number of electric switching elements which are opened or closed in accordance with digital data to be transmitted, are sensed with appropriate circuitry comprising a capacitor (or other electric state manifesting element) and circuit isolation diodes for each electric switching element and common initializing circuitry and sensing commutator circuitry. Preferably a shift register otherwise present for deserializing incoming data and timing wave generation is arranged for controlling the commutating function as incoming data is rippled through the shift register. Frequency division, amplitude division or time division multiplexing separates the signals on the transmission line for recognition at the terminals.

3,705,265
TELEPHONE ANSWERING DEVICE

Neal J. Buglewicz, 12 Empty Saddle Road, Rolling Hills Estates, Calif.

Filed May 7, 1971, Ser. No. 141,245
Int. Cl. H04m *1/64*
U.S. Cl. 179—6 R 2 Claims

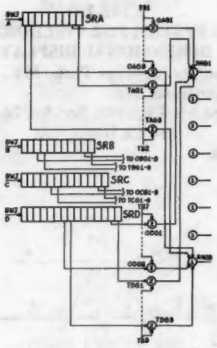


Telephone answering and recording device in which the answering function is triggered by an incoming call and the recording function is conditioned by the charging of time limiting capacitors during the answering function. The capacitors have transistors connected therewith which are triggered by the residual voltage on the capacitors upon completion of the answering function to signal the commencement of the recording function and control the duration of the recording function.

3,705,266
TELEPHONE SWITCHING SYSTEMS

Alexander Schroder Philip, Liverpool, England, assignor to Plessey Handel Und Investments A.G., Zug, Switzerland

Filed April 29, 1971, Ser. No. 138,643
Claims priority, application Great Britain, May 8, 1970, 22,328/70
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 AT 2 Claims

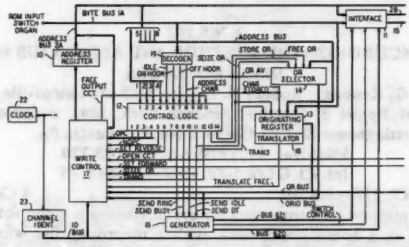


The proposal allows a switching center to be loaded with a combination of bothway circuit and unidirectional circuit-carrying systems with no increase in control complexity, no new switching stage(s), no frequency changing and no alteration to the super-highway format. The bothway serial highways are assembled in groups of four, as compared with the groups of eight employed in the original unidirectional-working scheme. Each bothway channel is associated with two time-slots on the parallel super-highway, one time-slot being inherently originating and the other terminating. In the receive direction the distribution of one serial channel on a highway to two parallel channels on the super-highway is accomplished at the serial-parallel converter stage. The length of each serial-parallel shift register is increased by one bit relative to the unidirectional scheme. Two sets of multiplexing gates are then associated with the output of each such shift-register, and this gating is such that if the two sets of gates are enabled in turn, at consecutive bit-times, then the complete channel contained in one shift-register appears at consecutive time-slots (one originating, one terminating) on the super-highway. In the transmit direction a complementary function is employed.

3,705,267
SUPERVISORY CIRCUIT FOR MONITORING THE FORMATION AND TERMINATION OF INTERCONNECTIONS IN A TIME-DIVISION SWITCH

Patrick John Marino, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 3, 1971, Ser. No. 177,690
Int. Cl. H04j *3/12*
U.S. Cl. 179—15 BY 9 Claims



A processor applies address data to individual time slots on an address bus to direct data in corresponding time slots on a

data bus to outgoing channels. A supervisory circuit produces multi-byte messages describing processor transactions (formation of and taking down connections, et cetera) and produces accompanying address words to direct the messages to an outgoing monitoring path. If a time slot on the address bus does not contain an address word, indicating that this time slot is idle, a byte in the transaction message is inserted in the corresponding time slot on the data bus and the accompanying address word is written into the idle time slot on the address bus.

3,705,268

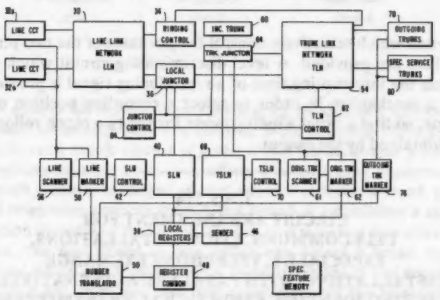
PASSIVE JUNCTOR CIRCUIT AND SELECTIVELY ASSOCIATED JUNCTOR CONTROL

Otto Altenburger, Rochester, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Dec. 22, 1970, Ser. No. 100,571

Int. Cl. H04q *3/48*

U.S. Cl. 179—18 E **28 Claims**



A junctor provides a connection circuit for a line link network, trunk link network and service link network, in the form of a passive switching circuit under control of a junctor control. A single junctor control is provided for a plurality of junctors on a time share basis and serves to control each junctor in response to commands from the common control equipment.

3,705,269

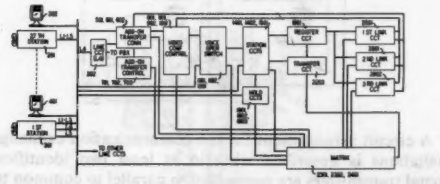
MULTILINK WIDEBAND INTERCOMMUNICATION SYSTEM

John Pringle Audesirk, Dorchester, Mass.; Charles Ernest Morse, Holmdel, N.J., and Gordon Douglas Weed, Denver, Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed March 1, 1971, Ser. No. 119,761

Int. Cl. H04m *3/42*

U.S. Cl. 179—18 B **27 Claims**



Wideband service between any two stations in a key telephone system is provided by a multilink matrix switching network. A register circuit common to all of the stations and common to all of the links monitors the status of each link and allows access to the matrix network from calling stations only when at least one link of the network is idle. On dial selective connections, signals identifying the calling station are communicated to the register circuit directly from each calling station. Signals identifying the called station are communicated to the register via the link assigned by the register to serve a given call request. On direct signaling connections, the identification signals of the called station are communicated to the register circuit from the called station in response to signals from a calling station. The system is arranged such that when a conference is desired the added stations are connected by the register circuit to the link serving the original calling and called stations so that the entire wideband conference is contained on the same link.

3,705,270

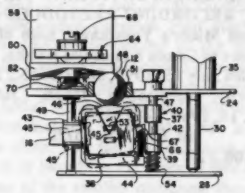
MOUNTING ARRANGEMENT FOR A MAGNETIC TAPE HEAD INCLUDING A SPHERICAL CAM FOLLOWER AND AN ARCUATELY SHAPED TAPE HEAD MOUNTING BRACKET

William B. Huber, Park Forest, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 21, 1971, Ser. No. 108,473

Int. Cl. G11b *5/56, 21/24*

U.S. Cl. 179—100.2 CA **12 Claims**



A mounting arrangement for the magnetic tape head in a tape player for playing multi-track tape cartridges comprises a mounting block movable along a vertical path in a plane adjacent the plane of the tape for positioning the tape head with respect to the tracks on the tape, and a collar receiving the tape head, connected to the block and rotatable with respect thereto for making an azimuth adjustment of the tape head with respect to the tape. A cam having a plurality of cam surfaces corresponding to different tracks on the tape is selectively coupled to the mounting arrangement through a cam follower mounted in engagement with a selected cam surface and the collar of the mounting arrangement. The cam follower includes a ball mounted in rolling engagement with a surface of the collar and the selected cam surface; the former being curved so that azimuth adjustments of the tape head do not affect the vertical positioning of the tape head along the path.

3,705,271

AUDIO TUTORING DEVICE INCLUDING RECORDING CAPABILITY

Lawrence R. De Bell, Bethany, and David D. Price, Jr., Oklahoma City, both of Okla., assignors to Economy Co., Oklahoma City, Okla.

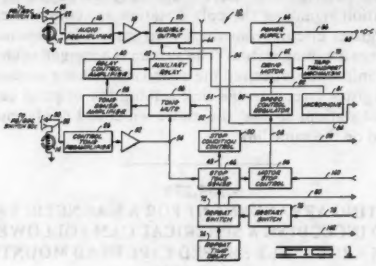
Continuation-in-part of Ser. No. 860,292, Sept. 23, 1969, Pat. No. 3,594,919. This application March 26, 1971, Ser. No. 128,302

Int. Cl. G11b *23/18, 27/32*

U.S. Cl. 179—100.2 MD **5 Claims**

Teaching machine apparatus consisting of audio record playback apparatus for reproducing plural channel record tapes including both audio information and control tone signals, and as used in combination with specialized recorder apparatus adapted for answer recording in response to played back instructional material and including interactive control means as between playback and recording circuitry during student usage. The recorder apparatus includes control tone

generation means as well as switching and control circuitry for placing audio information signals and control tone signals on



separate channels of the plural channel record tape, and automatic timing means provide control over control tone duration and tape transport drive energization.

3,705,272

NOISE DIMINISHING SWITCHING CIRCUIT FOR MAGNETIC RECORDING-REPRODUCING DEVICE

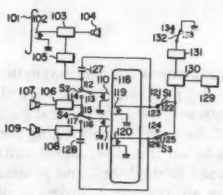
Takao Tsuji, and Minoru Yoshikawa, both of Kawasaki-shi, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 15, 1970, Ser. No. 55,115

Claims priority, application Japan, July 18, 1969, 44/56805; Aug. 16, 1969, 44/77416

Int. Cl. G11b *15/12*

U.S. Cl. 179—100.2 K **10 Claims**



A magnetic recording-reproducing device comprises at least one switchable recording-reproducing head and at least one erase head. In a high-frequency bias recording system, high-frequency bias is applied to the recording-reproducing head in addition to the signals to be recorded on the magnetic recording medium. Also in a high-frequency erasing system, high-frequency erasing current is applied to the erase head. In both cases, in switching the operation modes of each head from one to the other and vice versa, the annoying noise is recorded on the recording medium because of the high-frequency current applied to the respective heads. In order to eliminate the noise, prior to mode switching of the heads, the high-frequency current is interrupted and thereafter high-frequency current is supplied to the heads.

3,705,273

MAGNETIC RECORDING AND REPRODUCING APPARATUS

Yasuyuki Noyori; Eiji Uehira, and Tadao Katayama, all of Kobe, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

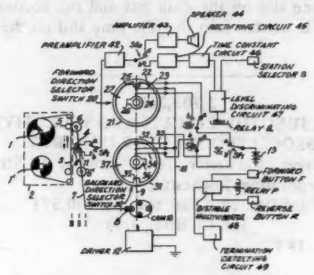
Filed Oct. 21, 1971, Ser. No. 191,210

Claims priority, application Japan, Oct. 23, 1970, 45/93214

Int. Cl. G11b *21/08, 23/04*

U.S. Cl. 179—100.2 Z **6 Claims**

A magnetic recording and reproducing apparatus which is provided with recording and reproducing functions in both forward and backward directions of a tape and a tape position selecting function in accordance with a recording mode. In order to enable carrying out of recording and reproducing operations in both forward and backward directions of a tape, two capstans and two pinch rollers are provided on both sides of magnetic heads opposed to upper and lower tracks of a tape. In addition, a special cam mechanism and a selector



switch which selectively control the positions of the two pinch rollers are provided. A level discriminating circuit which detects the interrupting time of a reproducing signal is provided in a mechanism in order to select a recording position of a tape, so that a rapid winding mode for the two pinch rollers is maintained by the output.

3,705,274

CIRCUIT ARRANGEMENT FOR TELECOMMUNICATION INSTALLATIONS, ESPECIALLY, TELEPHONE EXCHANGE INSTALLATIONS WITH PARALLEL ALTERNATIVELY ACTING IDENTIFICATION SIGNAL TRANSMITTERS

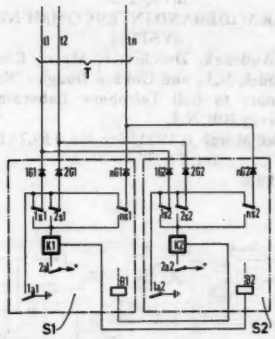
Helmuth-Joachim Bock, Zuricher-Str. 128, 8000 Munich 71, and Anton Sennefelder, Am Erdapfelgarten 10a, 8031 Gilching, both of Germany

Filed May 18, 1971, Ser. No. 144,542

Claims priority, application Germany, May 20, 1970, P 20 24 603.1

Int. Cl. H04m *3/24*

U.S. Cl. 179—175.2 R **4 Claims**



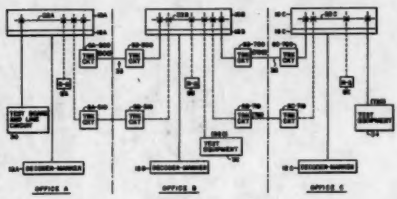
A circuit arrangement for telecommunication exchange installations is described wherein at least two identification signal transmitters are connected in parallel to common transmission line means to send over first connecting means constituted by rectifiers. The sending circuits in each transmitter corresponding to the common line means is combined into a collection line over second connecting means. A control device is provided which monitors the rectifiers for defects in the form of lowered resistance in the conduction blocking direction. Upon occurrence of such a defect, the control device limits operations to only the identification signal transmitter having the defective rectifier. The remaining transmitters are switched off and characterized as blocked.

3,705,275

TELEPHONE TRUNK TESTING SYSTEM

Derek Leyburn, Ottawa, and Murray Allan Davey, Thornhill, Ontario, both of Canada, assignors to The Bell Telephone Company of Canada, Quebec, Canada

Filed Sept. 30, 1971, Ser. No. 185,185
Int. Cl. H04b 3/46
U.S. Cl. 179—175.3 6 Claims



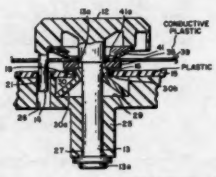
A system for testing telephone trunks, particularly trunks in tandem extending between three or more crossbar offices, in which each trunk circuit is given a line location and a local telephone number in its own office. The switching equipment in each office is arranged so that when it receives a trunk circuit telephone number from a test board, it establishes a connection directly to that trunk circuit, as if it were a line circuit. Thus, the test board in one office can select a trunk to a second office, thereby seizing a register-sender in the second office; it can then dial into that register-sender the telephone number of a desired trunk from the second office to a third office, thus seizing a register-sender in the third office, and it can then dial into such register-sender the telephone number of test equipment in the third office, allowing the trunks to be tested in tandem.

3,705,276

KEYBOARD SWITCH ASSEMBLY WITH CONDUCTIVE PLASTIC CONTACTOR AND ACTUATOR SPRING SLEEVE BIASING MEANS

Richard E. Seeger, Jr., Marblehead, and George T. Hodgson, Jr., Melrose, both of Mass., assignors to Chomerics, Inc., Woburn, Mass.

Filed May 20, 1971, Ser. No. 145,212
Int. Cl. H01h 13/60, 1/02
U.S. Cl. 200—5 A 16 Claims



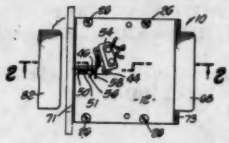
An encoded switch array having a keyboard comprising a plurality of buttons, each button when depressed adapted to force a conductive contactor against a conductive wiring pattern supported on a board or the like, the contactor preferably being of a conductive plastic normally held away from the wiring pattern by resilient biasing means.

3,705,277

MULTI-CODE, TAMPER PROOF, CARD-OPERABLE MAGNETIC LOCKING MECHANISM

Bruce S. Sedley, Marin County, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.

Filed May 21, 1971, Ser. No. 145,701
Int. Cl. H01h 27/00; E05b 47/00
U.S. Cl. 200—45 30 Claims



A programmable, card-operable magnetic locking mechanism of the type having a movable tumbler-carrying core disposed above a fixed keeper plate provided with openings which normally receive the ends of tumbler magnets in the core to prevent movement of the core, some of the tumbler magnets being movable out of the keeper plate openings by a magnetically coded program card inserted into a slot above the core, and the remainder of the tumbler magnets being movable by a magnetically coded pass card inserted into a slot beneath the keeper plate. The program cards and the pass cards are coded with magnetized spots arranged to align with the tumbler magnets when the cards are inserted into their respective slots. The tumbler-receiving openings in the keeper plate are of two different sizes. If one of the tumblers extends into one of the smaller openings, the core cannot be moved. If none of the tumblers extends into a smaller opening, but one of the tumblers extends into one or more of the larger openings, the core can be moved a limited distance to actuate a first switch. If none of the tumblers extend into the keeper plate openings, the core can be moved through an extended distance to actuate a second switch. A control circuit which includes both switches is provided with a control switch for selectively rendering the first switch effective or ineffective to actuate an operator (e. g., a turnstile, parking gate, etc).

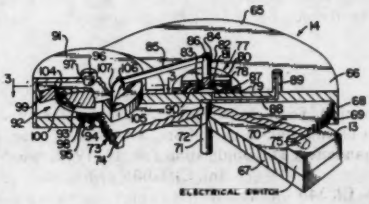
A tamper-prevention pin is slidably mounted in an opening in the core so that if tumblers are displaced from their respective openings in the keeper plate by some unauthorized means (e. g., by sharply striking the lock from above, or by turning the lock upside down), the tamper-prevention pin will move into engagement with a fixed structure in the lock to prevent movement of the core.

3,705,278

PNEUMATICALLY ACTUATED TIMER PROGRAMMING CAM MECHANISM AND SWITCH

Douglas R. Scott, 16 Susquehana Court, Elkhart, Md.

Division of Ser. No. 776,224, Nov. 15, 1968. This application Aug. 26, 1970, Ser. No. 67,236
Int. Cl. F17d 3/00; H01h 7/02
U.S. Cl. 200—33 B 5 Claims



This disclosure relates to a laundry machine wherein the rotating laundry confining drum or tub is operatively intercon-

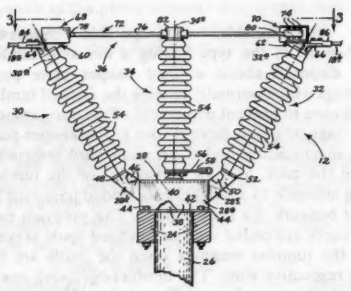
nected to a vacuum pump to cause continuous operation of the vacuum pump during the entire movement of the confining means so as to provide a source of vacuum for controlling vacuum operated actuators of the apparatus. In addition, a pneumatically operated timer controlling the "on-off" operation of the laundry machine is repetitively actuated and deactuated by the movement of the laundry confining means.

3,705,279

SINGLE-POLE DOUBLE-BREAK HIGH-VOLTAGE SWITCH ASSEMBLY

Charles F. Kerr, Jr., Hillsboro, Oreg., assignor to Eltec, Inc., Portland, Oreg.

Filed June 30, 1971, Ser. No. 158,253
Int. Cl. H01h *31/00*
U.S. Cl. 200—48 SB **4 Claims**



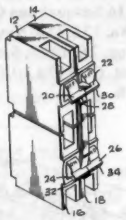
A high-voltage single-pole double-break switch assembly characterized by two outer, fixed, diverging, coplanar insulators whose inner adjacent ends are anchored to a base, and whose outer ends are free and carry switch contacts. Intermediate the outer insulators is an inner insulator journaled on the base for rotation about its own longitudinal axis. The inner insulator carries a switch blade whose outer ends simultaneously engage and disengage the switch contacts with rotation of the insulator. With the blade engaging the contacts, the blade and the two outer insulators bound a substantially triangular zone, one apex of which is adjacent the base.

3,705,280

INTERLOCK FOR CIRCUIT BREAKER SWITCHES

Harry Keith Harms, Los Angeles, Calif., assignor to Excel Electrical Supply Co., Van Nuys, Calif.

Filed June 4, 1971, Ser. No. 150,044
Int. Cl. H01h *9/26*
U.S. Cl. 200—50 C **7 Claims**



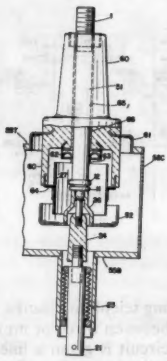
Circuit breaker switches which have their load sides connected to the same bus, from diverse power sources, are mechanically interconnected so only one switch can be in the on condition at any one time. The passive mechanical interconnection comprises an inextensible interlock link between the handles on the circuit breaker switches.

3,705,281

BUSHING INSULATOR IMPROVEMENTS FOR A DEAD TANK VACUUM SWITCH

Elmer L. Luehring, Cleveland Heights, Ohio, assignor to Joslyn Mfg. and Supply Company, Chicago, Ill.

Filed April 29, 1971, Ser. No. 138,563
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **1 Claim**



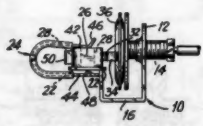
A vacuum switch is of the type having a metallic or other material electrically dead enclosure through which one or more conductive terminal leads extend. Interposed between each terminal lead and enclosure is a respective, preferably ceramic, insulator bushing. Annular, semi-flexible metal sealing means are at one limit embedded in (or could be sealed to) the insulator ceramic and at other limits metal-to-metal secured to an enclosure tank part and metal-to-metal secured to terminal lead. Metal support means for metal condensing shields may extend from embedment in the ceramic material and be metal-to-metal bonded similarly.

3,705,282

MOUNTING DEVICE FOR ELECTRICAL SWITCH

Roland A. Benoit, Danielson, Conn., assignor to Interroyal Corporation, New York, N.Y.

Filed Dec. 7, 1971, Ser. No. 205,498
Int. Cl. H01h *9/08*
U.S. Cl. 200—168 R **5 Claims**



A device for holding an electrical switch including an insulating body with at least a pair of oppositely disposed apertures. The device comprises a mounting bracket including at least a pair of projecting members or dimples aligned with the pair of oppositely disposed apertures and a separate resilient spring member of a generally U-shape having a pair of facing leg members. The electrical switch is placed on a platform segment of the mounting bracket with the dimples communicating with the apertures, and the combined switch and bracket assembly is wedged between the leg members of the resilient keeper spring.

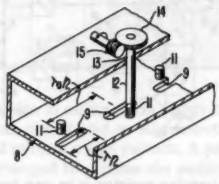
ERRATA

For Classes 219—262 thru 346—72 see:
Patents Nos. 3,705,414 thru 3,705,425

3,705,283
MICROWAVE APPLICATOR EMPLOYING A BROADSIDE SLOT RADIATOR

William H. Sayer, Jr., San Mateo, Calif., assignor to Varrian Associates, Palo Alto, Calif.

Continuation of Ser. No. 5,442, Jan. 23, 1970, abandoned.
This application Aug. 16, 1971, Ser. No. 172,176
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 6 Claims

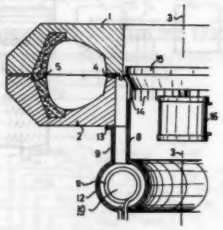


A microwave applicator for treating material with microwave energy is disclosed. The applicator includes a broadside radiator formed by a hollow elongated waveguide having an array of resonant slots communicating through the wall of the waveguide, such slots being spaced apart on their centers along the axis of the guide by one-half a guide wavelength an array of slot loading members are disposed to project into the waveguide from alternate sides of adjacent slots for coupling microwave energy from the waveguide radiator through the slots in an in-phase relation to obtain a broadside radiator. The loading members may be separately adjusted for adjusting the energy profile coupled form the antenna to the load.

3,705,284
INDUCTOR FOR THE THERMAL TREATMENT OF A MATERIAL WHICH IS NOT VERY OR NON-ELECTRICALLY CONDUCTING CONTAINING FERROMAGNETIC OR ELECTRICALLY CONDUCTIVE PARTICLES

Pierre C. Binard, Embourg, Belgium, assignor to Elphiac, Bruxelles, Belgium

Filed Feb. 24, 1970, Ser. No. 13,434
Claims priority, application Belgium, Feb. 27, 1969, 70,585
Int. Cl. H05b *5/00*; B29h *5/02*; H05b *9/02*
U.S. Cl. 219—10.49 8 Claims

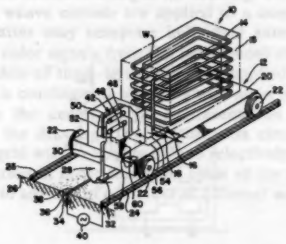


An inductor for use in the thermal treatment of a material which is not very or non-electrically conducting containing ferromagnetic or electrically conductive particles. The inductor forms, in combination with the insulation between its conductors, a mold in which the material containing ferromagnetic or electrically conductive particles is submitted to the thermal treatment.

3,705,285
MOBILE APPARATUS FOR THE INDUCTION HEATING OF METAL INGOTS

John F. Cachat, Cleveland, Ohio, assignor to Growth International, Inc., Cleveland, Ohio

Filed Nov. 5, 1971, Ser. No. 196,028
Int. Cl. H05b *5/08*
U.S. Cl. 219—10.57 9 Claims

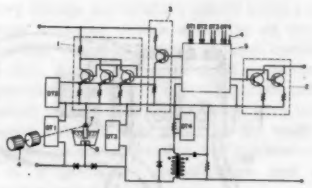


Induction heating apparatus is disclosed comprised of a track mounted wheeled carrier carrying one or more induction heating coil assemblies. The carrier is adapted to be moved along the track by motor means mounted on the carrier, and electrical power for energizing the motor means and the induction heating coil assembly or assemblies is transmitted thereto by means of a contact device such as a pantograph carried by the carrier for sliding engagement with an overhead or underground conductor. All equipment necessary to the operation of the induction heating coil assembly, such as transformers, capacitor banks, cooling means and the like are mounted on the carrier.

3,705,286
ELECTRIC DISCHARGE MACHINING DEVICE

Iwao Kondo, 39-9 Kitamachi 1-chome, Nerima-ku, Tokyo; Kenjiro Taoka, 12-7 Taishido 2-chome, Setagaya-ku, Tokyo, and Kenji Sasagawa, 4-16 Higashimagome 1-chome, Oota-ku, Tokyo, all of Japan

Filed Jan. 21, 1971, Ser. No. 108,330
Int. Cl. B23p *1/08, 1/14*
U.S. Cl. 219—69 C 10 Claims



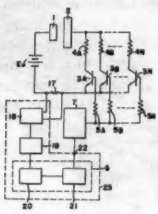
An electrical discharge machining device comprising a plurality of detectors for detecting currents and voltages at different parts of the device and generating detection signals in response to the detection, a logic circuit for determining different machining conditions of the device by logical combination of the detection signals so as to generate different discerning signals corresponding to the different machining conditions, and a control means for controlling the machining device based on relative frequency ratios of different discerning signals. Said relative ratios may be determined by using integrating circuits.

3,705,287

PROCESS FOR SHAPING WORKPIECE BY ELECTRICAL DISCHARGE AND APPARATUS THEREFOR

Nagao Saito; Kazuhiko Kobayashi, both of Nagoya, and Shigeru Takagi, Kasugai, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed April 8, 1971, Ser. No. 132,519
Claims priority, application Japan, July 2, 1970, 45/47389
Int. Cl. B23p 1/08
U.S. Cl. 219—69 P 6 Claims



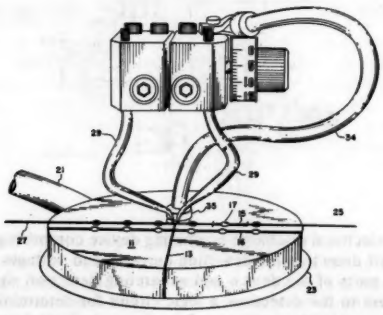
A process for shaping a workpiece using an electrical discharge and an apparatus for practicing the process is disclosed. According to the process, a workpiece is shaped by intermittently impressing a voltage pulse across a working gap between the workpiece and an appropriately shaped electrode. The process includes the step of controlling the duration of the electrical discharge in the working gap in accordance with operating conditions in the working gap to control the average current flow. The apparatus includes a control circuit having a capacitor circuit which controls the duration of the current discharge depending directly upon the time during which the no-load voltage exists in the working gap.

3,705,288

BUTT WELDER FOR FINE GAUGE TUNGSTEN/RHENIUM THERMOCOUPLE WIRE

Walter P. Kabana, and Charles B. King, both of Hampton, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 31, 1970, Ser. No. 103,230
Int. Cl. B23k 9/02
U.S. Cl. 219—101 7 Claims



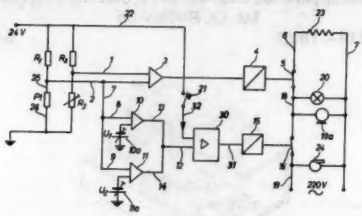
An electrical resistance butt welder for welding fine wire or other metal parts having small cross sections through the use of a vacuum groove and bow-shaped electrodes to hold the wires alined and abutted.

3,705,289

ELECTRONIC COPYING EQUIPMENT WITH CONTROLLED HEATER

Roland Szostak, Grunwald; Karl Hartwig, Unterhaching, and Gunter Maurischat, Munich, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 23, 1971, Ser. No. 182,986
Claims priority, application Germany, Sept. 30, 1970, P 20 48 076.6
Int. Cl. H05b 3/00
U.S. Cl. 219—216 8 Claims



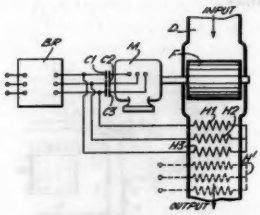
A temperature varying resistor is in one branch of a bridge circuit. The voltage across the diagonal of the bridge controls the heater cut in and cut off under normal operation. The voltage across the temperature varying resistor is applied to two threshold circuits and the lamp motor and heater are disconnected from the power supply the ventilator remains connected, if the voltage across the temperature varying resistance is outside of the two limits set by the threshold circuits.

3,705,290

ELECTRICAL GAS HEATING APPARATUS USING FREQUENCY MULTIPLYING CIRCUIT AND INDUCTION BLOWER

Clive Lynn Jones, Swansea, Wales, assignor to National Research Development Corporation, London, England

Division of Ser. No. 829,920, June 3, 1969, Pat. No. 3,611,434.
This application April 12, 1971, Ser. No. 133,123
Claims priority, application Great Britain, June 7, 1968, 27,259/68; Jan. 2, 1969, 325/69
Int. Cl. H05b 3/00; F24h 3/04
U.S. Cl. 219—364 6 Claims



An electric motor is fed through a frequency multiplying circuit formed by a rectifying circuit with a bypass circuit connected across the motor for removing the DC component of the rectified current so that the motor is fed with an AC current having a higher frequency than that of the supply, the motor being mechanically coupled to drive a gas blower and the bypass circuit comprising a heater in the gas path through the blower.

3,705,291

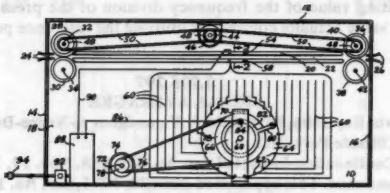
METHOD AND APPARATUS FOR MAKING PERFORATED SIGN TEMPLATES

Lawrence E. Thompson, West Linn, Oreg.

Continuation-in-part of Ser. No. 43,338, June 4, 1970, abandoned. This application March 23, 1971, Ser. No. 127,172

Int. Cl. H05b 7/18

U.S. Cl. 219—384 16 Claims



Artwork for a sign is outlined on paper or other dielectric sheet material with pencil lead or other electrically conductive marking material to form a sign pattern. A pair of spaced apart electrodes are arranged to receive the outlined sheet material between them, and they are energized for intermittent conduction between predetermined areas thereof only when said conductive marking material is interposed between said areas. The sheet material and electrodes then are moved relatively one to the other in a direction to cause small spaced apart portions of the conductive marking material to be interposed sequentially between the electrodes, whereby to cause conduction between the areas of the electrodes intercepted by the marking material and produce a plurality of spaced apart holes in the sheet material along the lines of marking material outlining the sign artwork. In one form of apparatus one of the electrodes of the pair is a single, elongated electrode and the other electrode of the pair comprises a plurality of laterally spaced electrode segments each connected sequentially to a source of intermittent electric potential to produce sequential conduction between the first named electrode and each of the electrode segments. In another form of apparatus one of the electrodes of the pair is a single, elongated, fixed electrode and the other electrode of the pair is an elongated electrode mounted spirally around an electrically non-conductive rotor. In still another form of apparatus one of the electrodes of the pair is a plate of electrically conductive metal on which the outlined sheet is supported and the other electrode of the pair is mounted on an elongated roller supported by a handle for hand manipulation over the sheet.

3,705,292

AUTOMATIC DEVICE FOR PREPARING PERFORATED CARDS OR BANDS FOR LOOM JACQUARDS

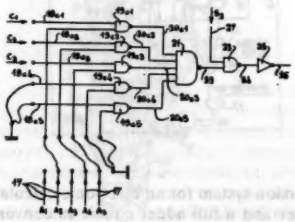
Pierre Frappe, Lyon, France, assignor to Societe Verdol S.A., Lyon, France

Filed Sept. 17, 1971, Ser. No. 181,469

Claimes priority, application France, Nov. 5, 1970, 7040904

Int. Cl. G06k 1/00

U.S. Cl. 235—61.6 A 8 Claims



An automatic device to be used in the preparation of perforated cards or bands for loom Jacquards in accordance with a colored drawing, comprises a number of weave circuits, each including a grid one series of bars of which corresponds to the warp threads and the other one to the weft threads, the bars of a series being selectively connectable with the bars of the other series in accordance with the particular weave. The bars of the first series receive in succession a line signal each time the main photo-electric means which scans the drawing passes from one line thereof to the next one while the bars of the other series are connected with individual gates which are conditioned in succession just before the main photo-electric means scans a thread crossing in the drawing. The signals from the various weave circuits are applied to a combination circuit. The latter may comprise individual gates which also receive the color signals from the main photo-electric means and the outlets of these latter gates are applied to a general gate which is conditioned when the said main photo-electric means scan the center of the representation of a thread crossing in the drawing. The combination circuit may also comprise a grid with two series of bars selectively connectable with each other in order that each color of the drawing may correspond to any one of a number of different weaves.

3,705,293

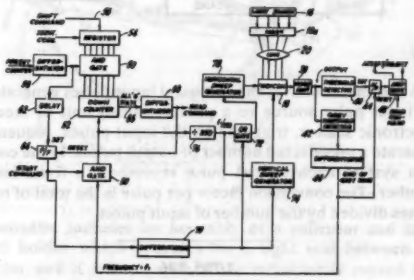
HIGH-CAPACITY OPTICAL IMAGE SCANNING MEMORY SYSTEM AND CARD VERIFICATION SYSTEM

Melvin S. Cook, Upper Saddle River, N.J., assignor to Holobeam, Inc., Paramus, N.J.

Filed Dec. 21, 1970, Ser. No. 100,004

Int. Cl. G06k 7/08

U.S. Cl. 235—61.7 B 8 Claims



A memory storage and readout system using a camera as an optical image scanning device operating on the image of a mask which has a pattern formed thereon corresponding to the stored data. Addresses on the mask or its image for data storage correspond to specific locations in the pattern formed on the memory mask. In one embodiment, grey areas are regularly arranged between data areas on the mask to provide clocking signals to the addressing and readout circuits. Also disclosed is a personnel identification and credit card checking system utilizing this memory.

3,705,294

DATA CARD AND METHOD OF ENCODING SAME

Manfred R. Kuehnle, Lexington; Jurgen Kok, Bedford, and Dieter Jochimsen, Winchester, all of Mass., assignors to Elliott Business Machines, Inc., Randolph Industrial Park, Randolph, Mass.

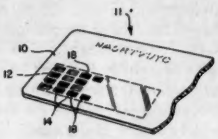
Filed April 8, 1970, Ser. No. 26,514

Int. Cl. G06k 19/06

U.S. Cl. 235—61.12 N 11 Claims

A data card which can be encoded by the user without special encoding facilities has a substrate with a first light reflection characteristic. The substrate carries a code field embrac-

ing all possible "bit" locations in the code. Selected bit areas in the field are treated to give them a different light reflection characteristic from the substrate in the remainder of the field,

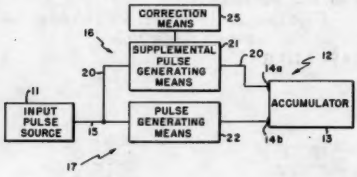


thereby impressing a code pattern in the code field consisting of "bit" locations having one of two different light reflection characteristics.

3,705,295
CONVERSION SYSTEM

Bernard K. Betz, Hennepin, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 773,678, Nov. 5, 1968, abandoned. This application Feb. 8, 1971, Ser. No. 113,663
Int. Cl. H03k 21/02; G06m 3/14
U.S. Cl. 235—92 PL **17 Claims**

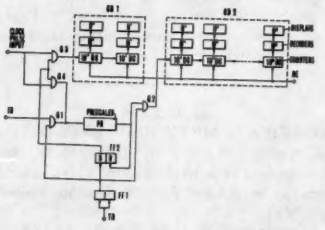


A system for converting electrical input pulses generated by an input pulse source to a predetermined unit of measure. Electronic scalers, triggered by the input pulses, sequentially generate a preselected number of output pulses. In the conversion system each output pulse represents a fixed integral number. The conversion factor per pulse is the total of output pulses divided by the number of input pulses.

3,705,296
COUNT DISPLAY SYSTEM

Kiyoshi Kochi, Tokyo, Japan, assignor to Iwatsu Electric Company Limited, Tokyo, Japan

Filed Feb. 22, 1971, Ser. No. 117,374
Claims priority, application Japan, Feb. 24, 1970, 45/15354; Feb. 24, 1970, 45/15355; Feb. 24, 1970, 45/15356
Int. Cl. H03k 21/18
U.S. Cl. 235—92 EA **5 Claims**

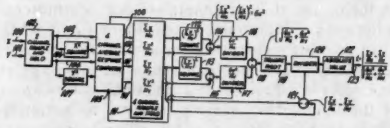


A count display system having count display devices for counting and displaying numerals of different orders of magnitude, a prescaler having a ratio of frequency division preset in accordance with the lower orders, a first gate circuit responsive to a gate control signal for supplying input signals to the prescaler for a predetermined time interval, a second gate circuit responsive to the gate control signal for supplying the output from the prescaler to the count display device of higher orders, additional circuits responsive to the gate control signal and the output from the prescaler for applying a supply of reference pulses, to the prescaler and for applying reference pulses of the same number as the reference pulses supplied to the prescaler to the count display device of the lower orders so as to calculate the difference between the limiting value of the frequency division of the prescaler and the value actually counted by utilizing the reference pulses.

3,705,297
SIGNAL AVERAGER

Erwin Roy John, Riverdale, N.Y., assignor to Neuro-Data, Inc., Cliffside Park, N.J.

Continuation-in-part of Ser. No. 878,158, Nov. 19, 1969, abandoned. This application June 28, 1971, Ser. No. 157,363
Int. Cl. G06g 7/28; G06j 1/00
U.S. Cl. 235—150.53 **6 Claims**

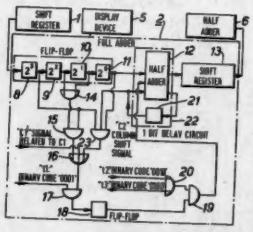


A special purpose computer is used to calculate the statistical T-test as a measure of the significance of the difference between two sample populations. The computer includes a four channel average response computer, squaring circuits, square root circuits, dividing circuits, differential circuits and summing circuits.

3,705,298
CONVERSION SYSTEM FOR USE IN ELECTRONIC CALCULATORS

Isao Hatano; Akira Nagano, and Kenzi Yosimoto, all of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto-shi, Japan

Filed Dec. 17, 1970, Ser. No. 99,090
Claims priority, application Japan, Dec. 17, 1969, 44/101959
Int. Cl. G06f 5/02
U.S. Cl. 235—154 **9 Claims**



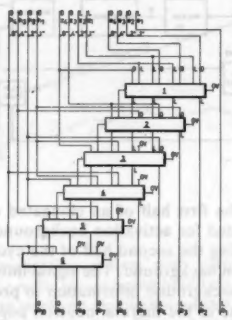
A conversion system for an electronic calculator employs a shift register and a full adder circuit to convert binary digit signals for decimal display purposes. The shift register and full adder include appropriate gating and delay-feedback circuitry for serial conversion, column shift, and read-out.

3,705,299

CIRCUIT ARRANGEMENT FOR CONVERTING A DECIMAL NUMBER CODED IN THE BCD CODE INTO A PURE BINARY NUMBER

Ingbert Bastian, Munich, and Horst Brogl, Unterhaching, both of Germany, assignors to Messerschmitt-Bolkow-Blohm, Munich, Germany

Continuation of Ser. No. 854,831, Sept. 3, 1969, abandoned.
This application Sept. 24, 1971, Ser. No. 183,602
Int. Cl. G06f 5/00
U.S. Cl. 235—155 5 Claims



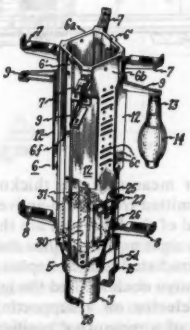
A circuit arrangement, for converting a decimal number expressed in the BCD code into a pure binary number, comprises plural binary full adder circuits arranged successively in ascending binary digit order and each having signal inputs and binary digit outputs. Plural BCD code input terminals have applied thereto the decimal number to be converted, and lines connect each code input terminal commonly to all those signal inputs of the adder circuits which are associated, in correct decimal column position, with those 2^n numbers which yield, as their sum, the decimal number, expressed in the BCD code, and indicated, with consideration of its decimal column position, at their respective code input terminals. The adder circuits are interconnected in such a manner that the carryover and output signals of each binary full adder circuit are supplied in correct decimal column position to the signal inputs of the respective succeeding binary full adder circuit.

3,705,300

LUMINAIRE

Jerry R. Piemmons, Asheville, and Mark H. Raymond, Dana, both of N.C., assignors to General Electric Company

Filed April 22, 1971, Ser. No. 136,402
Int. Cl. F21s 1/10, 3/10, 13/10
U.S. Cl. 240—25 17 Claims



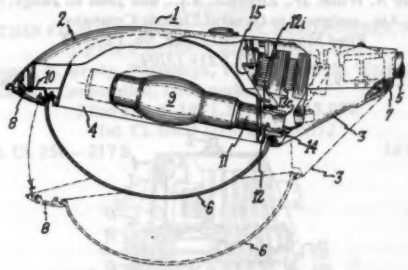
Post top luminaire having a plurality of gaseous discharge lamps is adapted to accommodate differently shaped globes for enclosing the lamps and ballast components for operating the same. An axially extending tubular support formed of separable parts carries the ballast components in its interior and the lamps on its exterior. A collar at the bottom of the globe is detachable to allow removal of the lamps through the open bottom of the globe, as well as to allow access to electrical operating components carried by the central support tube. A louvered canopy at the top of the globe allows outward flow of heated air from the luminaire interior. A slipfitter for mounting the luminaire on a hollow support post is connected to the bottom of the tubular support and has a slot to allow free passage of lead wires from the interior of the post to the interior of the luminaire for connection to the electrical operating components.

3,705,301

LUMINAIRE REFLECTOR AND LAMPHOLDER MOUNTING

John S. Franklin, and William C. Pursley, both of Hendersonville, N.C., assignors to General Electric Company

Filed Oct. 27, 1971, Ser. No. 192,874
Int. Cl. F21s 1/10
U.S. Cl. 240—25 10 Claims



Luminaire includes an assembly of a reflector and lamp socket holder which provides for a tight seal between the reflector and a refractor when the refractor is moved into closed position against the reflector, while maintaining a fixed relationship between the lamp and the reflector. The front end of the reflector is fixedly secured to the luminaire housing, and at the rear end of the reflector the lamp socket extending through an opening in the reflector is adjustably secured to a socket holder fixed to the reflector. A leaf spring attached to a fixed support urges the socket holder downwardly for maintaining the reflector rim gasket in firm engagement with the mating refractor rim in the closed position. Tabs on the socket bracket projecting over the fixed support serve to prevent the reflector from falling out of the housing when the refractor is dropped to open position.

3,705,302

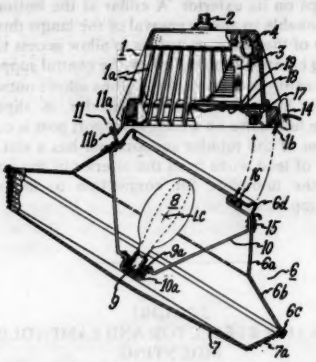
LUMINAIRE

John R. Judge, Mobile, Ala., and Robert G. Kilpatrick, Hendersonville, N.C., assignors to General Electric Company

Filed March 12, 1971, Ser. No. 123,685
Int. Cl. F21s 1/02
U.S. Cl. 240—78 LH 10 Claims

Luminaire for indoor industrial use has an optical assembly having a diameter substantially greater than its height and adapted to be mounted at relatively low height above the

floor. The optical assembly includes a dish shaped refractor sealed at its periphery to a reflector and a lamp mounted therein with its base down. The optical assembly is hingedly



connected at one side to an upper ballast housing to enable the optical assembly to be swung down to provide access to its interior for servicing the lamp.

3,705,303

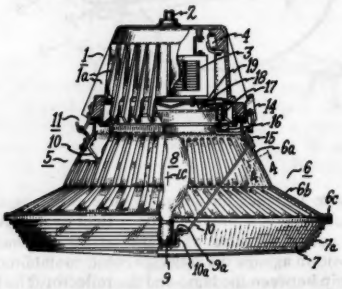
LUMINAIRE

Candler A. Willis, Jr., Zirconia, N.C., and John R. Judge, Mobile, Ala., assignors to General Electric Company

Filed March 12, 1971, Ser. No. 123,553

Int. Cl. F21v *13/04*

U.S. Cl. 240—93 **8 Claims**



Luminaire for indoor industrial use has an optical assembly having a diameter substantially greater than its height and adapted to be mounted at a relatively low height above the floor. The optical assembly comprises a reflector with fluted concave upper portion and an outwardly flaring lower skirt portion to which a large diameter dish-shaped refractor is secured. The refractor has an annular side wall formed with horizontal rows of prisms which depress part of the incident light and reflect the remaining light rays upwardly toward the ceiling. The bottom panel of the refractor is formed with radial light dispersing flutes.

3,705,304

PULSED NEUTRON WELL LOGGING APPARATUS HAVING MEANS TO VARY THE NEUTRON GENERATOR PULSE REPETITION RATE

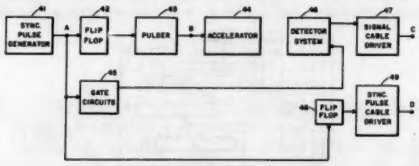
Eric C. Hopkinson, and Arthur H. Youmans, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed May 31, 1967, Ser. No. 642,592

Int. Cl. G01v *5/00*

U.S. Cl. 250—83.3 R **10 Claims**

A bistable multivibrator or scale of two circuit is inserted in the sync pulse line before a pulsed neutron generator to reduce the pulse repetition rate by a factor of two. The radiation detection system within the borehole instrument is gated in the conventional manner without the repetition rate of its detection gates being reduced by the factor of two. A second bistable multivibrator circuit is inserted in the sync pulse line before the sync pulse cable driver, the second multivibrator circuit causing the surface electronics to accept signal information during the first half of an elongated cycle which has not been corrected for activation background, and to accept information during the second half of the cycle which relates only to activation background. The signal information is combined with the background information to provide data relating to the decline of the thermal neutron population which is independent of the activation background counting rate.



3,705,305

INSTRUMENT FOR MEASURING THE THICKNESS OF LAYERS WITH RADIO-ACTIVE NUCLEIDES

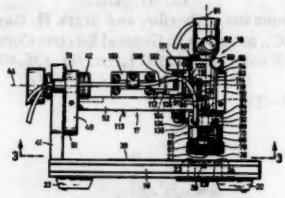
Helmut Fischer, Bergwaldstrasse 28, Gechingen, Germany

Filed Sept. 14, 1970, Ser. No. 66,706

Claims priority, application Germany, Aug. 10, 1970, P 20 39 646.7

Int. Cl. G01t *1/16*

U.S. Cl. 250—83.3 D **26 Claims**



An instrument for measuring the thickness of layers by means of radiation emitted from radio-active nucleides which interact with material of the layer and are then absolved by a radiation detector. A sighting mechanism determines the area of the layer to be irradiated and a diaphragm is interposed between the radio-active nucleide and the layer to define this area. A radiation detector on a supporting device can be moved into and out of a measuring position relative to this area. The sighting mechanism is operational when the radiation detector is out of measuring position and vice versa.

3,705,306
AIRCRAFT NAVIGATION SYSTEM WITH VERTICAL GUIDANCE

Lloyd E. Lydon, Northridge; Charles J. Steigleder, Encino, and Warren E. Carpenter, Malibu, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

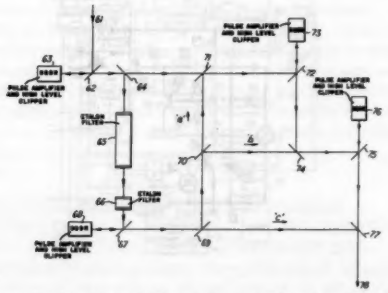
Filed Sept. 30, 1970, Ser. No. 76,877
Int. Cl. G06f *15/50*
U.S. Cl. 235—150.2 17 Claims

An aircraft navigation system with vertical guidance in which a vertical profile is computed based on the difference in altitudes between start and destination points and the distance therebetween. The vertical profile and aircraft altitude are used to derive a displayed error signal which indicates the required aircraft altitude correction needed to reach and maintain the aircraft on the profile so that when it reaches the destination point it is at the selected altitude above it. Also displayed is a vertical speed which should be maintained to maintain the aircraft on the profile or on a line parallel thereto.

3,705,307
OPTICAL REPEATER WITH PHASE ERROR CORRECTION

Alec Harley Reeves, Harlow; Melvin Murray Ramsay, Broxbourne; Anthony Edmund Mounter, and Simon French Laurence, both of Harlow, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 22, 1970, Ser. No. 39,833
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 5 Claims

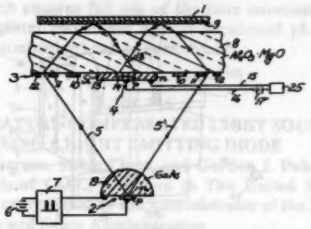


A phase modulated pulsed carrier wave transmission system wherein binary information is conveyed in the form of pulses such that the significance of each signal pulse is represented by the phase of the carrier. An optical frequency repeater for the system employs self-quenching super-regenerative devices to correct phase errors in the pulses before they are relayed down the system.

3,705,308
PULSE CODED SOUND REPRODUCTION USING OPTICAL READ-OUT OF THE MICROPHONE MEMBRANE

Kurt Lehovec, 11 Woodlawn Drive, Williamstown, Mass.

Continuation-in-part of Ser. Nos. 692,051, Dec. 20, 1967, Pat. No. 3,546,469, and Ser. No. 32,160, April 27, 1970, Pat. No. 3,649,837. This application Nov. 16, 1970, Ser. No. 89,843
Int. Cl. G01d *5/34*; G02b *5/18*; H01j *39/12*
U.S. Cl. 250—217 SS 9 Claims



The vibrations of a membrane are read out by means of a pulsed light beam incident on a photoelectric sensor. Integrated sensor amplifier structures are used.

3,705,309
THIN FILM OPTOELECTRONIC SEMICONDUCTOR DEVICE USING LIGHT COUPLING

Thomas P. Brody, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 5, 1971, Ser. No. 112,972
Int. Cl. G02f *1/28*; H01j *39/12*
U.S. Cl. 250—217 S 16 Claims

An electro-optical switch composed of a film of semiconductor material, such as for example CdS, CdSe, containing suitable dopants and in which a first electro-luminescent region for generating photons of radiation is disposed in one portion of the film and a second photo-conductive region for receiving the photons is disposed in another portion of the film, which film has a thickness of from about 2000 A to about 3 microns, and means being provided for inducing the generation of photons in the first region, optically guiding the photons in the plane of the film to the second region and for receiving the photons in the second region.

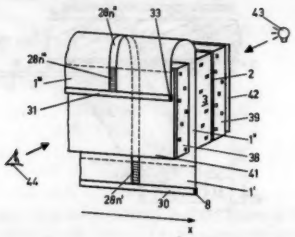
3,705,310
LIQUID CRYSTAL VOLTAGE DISPLAY DEVICE HAVING PHOTOCONDUCTIVE MEANS TO ENHANCE THE CONTRAST AT THE INDICATING REGION

Peter Wild, Wettingen, Switzerland, assignor to Brown, Boveri & Company Limited, Baden, Switzerland

Filed May 24, 1971, Ser. No. 146,196
Claims priority, application Switzerland, May 27, 1970, 7839/70
Int. Cl. G02f *1/16*
U.S. Cl. 250—229 19 Claims

In the optical display disclosed, a pair of flat electrodes sandwich a two-dimensionally extending electro-optical medium that exhibits one optical characteristic in an area subjected to a voltage in excess of a threshold voltage and another opti-

cal characteristic where subjected to a voltage less than the threshold voltage. A potential gradient is applied along one electrode and segment wise constant voltages applied to the band electrode so that the voltage to which the medium is subjected varies locally from below to above the threshold voltage. The voltage to be displayed is added to the voltage on one electrode so that the threshold level and the boundary between the zones moves along the medium with the voltage to be displayed. The band electrode is formed of discreet



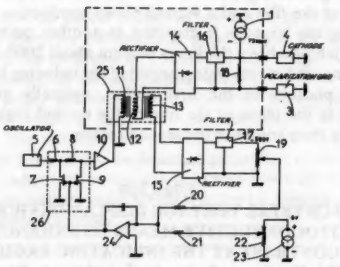
bands parallel to the zone-separating boundary. An additional constant voltage is applied lengthwise across each band. A portion of each band is photo-resistive. When this portion senses the one zone that is subject to the higher voltage it increases the voltage applied locally to the medium in the form of a positive feedback. This accentuates the steepness of the threshold. Photosensitive means also change the applied voltages in response to changes of the threshold level. For this purpose circuit means respond to the photosensitive means by changing the applied voltages.

3,705,311

REGULATABLE CONTINUOUS HIGH VOLTAGE GENERATOR

Helenio Llop, Creteil, France, assignor to Societe D'Optique, Precision, Electronique et Mecanique-Sopelem, Paris, France

Filed Jan. 5, 1971, Ser. No. 104,096
Claims priority, application France, Jan. 8, 1970, 7000551
Int. Cl. H02j *1/00*
U.S. Cl. 307—4 **3 Claims**



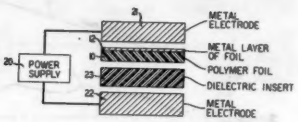
A regulatable continuous high voltage generator has a source of alternating voltage with the primary winding of a transformer connected thereto through a variable gain modulator. A first secondary of the transformer is connected through a rectifier and filter to a load receiving the operating voltage. A second secondary of the transformer is connected through a rectifier and filter to a counter reaction circuit which controls the variable gain modulator.

3,705,312

PREPARATION OF ELECTRET TRANSDUCER ELEMENTS BY APPLICATION OF CONTROLLED BREAKDOWN ELECTRIC FIELD

Gerhard Martin Sessler, Summit, and James Edward West, Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 2, 1970, Ser. No. 85,882
Int. Cl. H04r *19/04*
U.S. Cl. 307—88 ET **11 Claims**



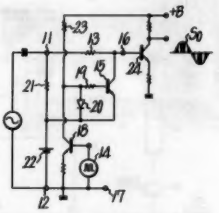
A thin film electret with excellent surface charge properties is produced by placing a thin polymer film between two electrodes together with a dielectric plate and by applying a voltage of about 30 keV across the resulting sandwich of elements for about 1 minute. The process is carried out at room temperature and at atmospheric pressure. By using an auxiliary dielectric plate that is much thicker than the film and has the proper resistivity, a high voltage drop can be applied across the film without a resulting destructive breakdown. Charge-densities of up to 1.5×10^{-6} C/cm^2, which are greater by a factor of 3 than those previously reported, are produced.

3,705,313

TRANSISTOR CIRCUIT PERFORMING GATING OPERATION

Mitsuo Ohsawa, Fujisawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed June 7, 1971, Ser. No. 150,441
Claims priority, application Japan, June 9, 1970, 45/49604; June 9, 1970, 45/49605; June 12, 1970, 45/50825
Int. Cl. H03k *17/56*
U.S. Cl. 307—239 **10 Claims**

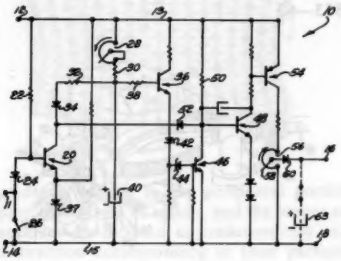


In a signal gating circuit in which a switching transistor provides a shunt path for the input signal when switched to its conductive condition by the application of a gating signal thereto, the transistor is biased to be completely inactive when in its nonconductive condition, whereby to avoid any distortions in the intermittently gated signal regardless of the nature of the input signal. The signal gating circuit is suitable for fabrication as an integrated circuit, and may be embodied in modulator or demodulator circuits.

3,705,314
PULSE GENERATOR

John M. Haurykiewicz, Kenosha, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed July 1, 1971, Ser. No. 158,921
Int. Cl. H03k 1/12
U.S. Cl. 307—266 9 Claims

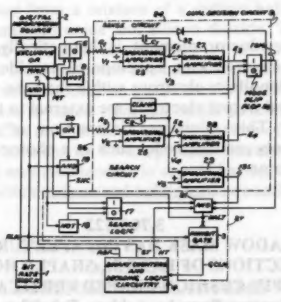


A control circuit for providing a voltage pulse of a variable height and width upon the occurrence of a predetermined condition includes, a pair of input terminals, a pair of output terminals, first switch means connected to the input terminals and being nonconductive upon the occurrence of the predetermined event, second switch means responsive to the first switch means and having a conductive condition when the first switch means is nonconductive and third switch means having a conductive condition when the second switch means is conductive establishing a pulse on the output terminals. Means are provided for controlling the width of the output pulse by controlling the period of conduction of the second switch means and means connected to the output of the third switch means are provided for controlling the height of the pulse.

3,705,315
FRAME SYNCHRONIZATION SYSTEM

James M. Clark, Cedar Grove, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Continuation of Ser. No. 31,337, April 23, 1970, abandoned.
This application Nov. 1, 1971, Ser. No. 194,596
Int. Cl. H03k 5/13; H04l 7/00
U.S. Cl. 307—269 5 Claims

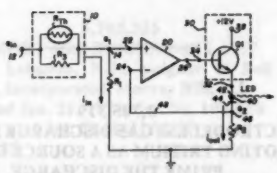


There is disclosed a framing control circuit for a frame synchronization system. The circuit includes a sense circuit having a first integrator with a relatively long time constant and a first amplitude comparator to detect an out-of-synchronization condition, and a search circuit having a second integrator with a relatively short time constant, a second amplitude comparator and a third amplitude comparator to detect an in-synchronization condition. The third amplitude comparator produces a high output and a mode flip flop having its "1" input coupled to the first comparator produces a high output on its "1" output when an out-of-synchronization condition is present. The simultaneous presence of these two signals activates the search logic of the frame synchronization system. The "0" input of the flip flop is coupled to the second comparator and produces a high output on its "0" output when an in-synchronization condition is present. A diode is coupled between the "0" of output of flip flop and the input of the first integrator, said diode being rendered conductive when the "0" output is low. This diode conduction will reset the first integrator to a reference operating level which ensures full use of the time constant thereof and, hence, better protection against accidental phase shift (loss of synchronization) due to a short fade.

3,705,316
TEMPERATURE COMPENSATED LIGHT SOURCE USING A LIGHT EMITTING DIODE

Clifford N. Burrous, Santa Clara, and Gordon J. Deboo, Sunnyvale, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 27, 1971, Ser. No. 212,028
Int. Cl. H03k 19/14; H05b 33/08
U.S. Cl. 307—311 12 Claims

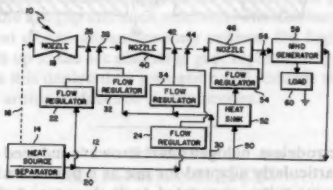


A temperature compensated light source including a thermistor, several resistors, an operational amplifier and a light emitting diode combined in such a manner that the non-linear characteristics of the thermistor cause the operational amplifier to vary the energizing current supplied to the light emitting diode to compensate for the non-linear temperature characteristics of the diode. The radiant energy output of the light source is constant if a fixed input voltage is applied to its input terminal, or will vary in direct proportion to a variable input voltage applied to its input terminal.

3,705,317
ENERGY CONVERSION SYSTEM UTILIZING EXOTHERMIC REACTIONS

Lawrence L. Prem, Tarzana, Calif., assignor to North American Rockwell Corporation

Filed Oct. 4, 1971, Ser. No. 186,210
Int. Cl. H02n 4/02
U.S. Cl. 310—11 20 Claims



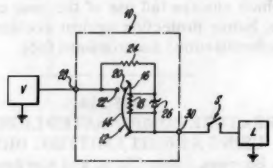
An energy conversion system utilizing a working fluid having at least two components that are chemically reactive so that desired exothermic reactions can be developed at one or more selected points in the system so that the vapor quality of the working fluid is either increased or maintained.

3,705,318

VOLTAGE AND LOAD INDEPENDENT FLASHER UNIT

Hemming G. Silberg, Summit, N.J., assignor to Wagner Electric Corporation

Filed Jan. 18, 1971, Ser. No. 106,967
Int. Cl. B60q 1/46; H01h 37/00
U.S. Cl. 307—132 T 5 Claims



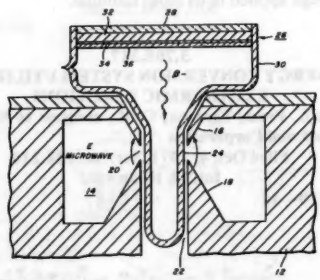
A flasher unit comprising an indirectly heated shunt flasher in combination with a voltage-regulating network comprising a resistor and a zener diode connected in series between the terminals of the flasher unit, with the zener diode being connected in parallel with the heater element of the flasher.

3,705,319

ELECTRODELESS GAS DISCHARGE DEVICES EMPLOYING TRITIUM AS A SOURCE OF IONS TO PRIME THE DISCHARGE

Harry Goldie, Randallstown, and Michael Goldman, Pikesville, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 18, 1971, Ser. No. 172,847
Int. Cl. H01p 1/14
U.S. Cl. 313—54 7 Claims



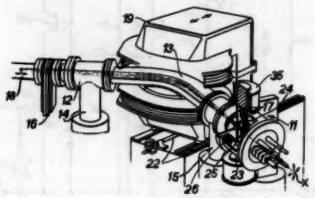
An electrodeless, halogen gas microwave-induced discharge device, particularly adapted for use as a power limiter stage, which has no wires connected to it. Incorporated into the discharge device is a free electron emitter comprising tritium adsorbed into a layer of material such as titanium or yttrium. The tritium yields sufficient initiatory electrons to prime the microwave gap so as to yield a short interval for radio-frequency breakdown of the gas, and to yield repeatable discharge characteristics with each incident radio-frequency pulse.

3,705,320

ION BEAM SOURCES WITH TILTABLE FIRING ANGLE

James Harry Freeman, Abingdon, England, assignor to The United Kingdom Atomic Energy Authority, London, England

Filed Jan. 19, 1970, Ser. No. 3,958
Claims priority, application Great Britain, Feb. 5, 1969, 6,289/69
Int. Cl. H01j 3/04, 3/10
U.S. Cl. 313—63 4 Claims



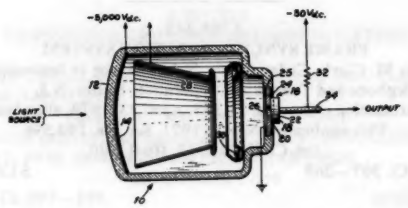
An ion source for an electromagnetic separator is tiltably mounted upon the ion beam passageway. Adjustment of the inclination to the passageway of the ion beam trajectory is thus provided.

3,705,321

ELECTRON TUBE WITH BONDED EXTERNAL SEMICONDUCTOR ELECTRODE

Lozure G. Wolfgang, Fort Wayne, Ind., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Nov. 13, 1970, Ser. No. 89,190
Int. Cl. H01j 31/26, 39/14
U.S. Cl. 313—65 AB 12 Claims



A semiconductor element is hermetically sealed to an evacuated electron tube envelope to provide a target electrode which collects electrons within the tube while the junction area and output electrode are external to the vacuum environment. This minimizes interaction of contaminating materials between electrodes such as a photocathode and the semiconductor.

3,705,322

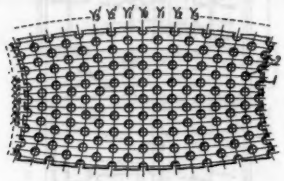
SHADOW MASK HAVING APERTURES AT INTERSECTIONS OF BARREL-SHAPED HORIZONTAL AND PIN-CUSHION-SHAPED VERTICAL LINES

Yohsuke Naruse; Ryosuke Ashiya; Takehiko Nii, and Yuzo Fuse, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 27, 1970, Ser. No. 40,868
Claims priority, application Japan, May 31, 1969, 44/42143
Int. Cl. H01j 29/06, 31/20, 29/80
U.S. Cl. 313—85 S 5 Claims

In a cathode ray tube having a curved phosphor screen, a shadow mask having apertures therein and electron beam generating means for generating three in-line electron beams aligned in a horizontal direction, the apertures of the shadow

mask are aligned in the form of barrel-shaped lines extending in a horizontal direction and are aligned in the form of pincushioned lines extending in a vertical direction. The apertures are circular at the central portion of the mask but



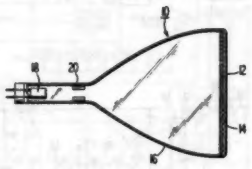
become gradually elliptic as the peripheral portion of the mask is approached from its center, and the longer axis of the elliptic apertures are inclined at predetermined angles to a horizontal direction corresponding to their particular locations.

3,705,323

CATHODOCHROMIC SODALITE AND CATHODE RAY TUBE EMPLOYING SAME

Igal Shidlovsky, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 13, 1971, Ser. No. 106,036
Int. Cl. H01j *29/12*; G03g *9/02*
U.S. Cl. 313—91 **3 Claims**



A cathodochromic cathode ray tube comprises an image screen employing improved cathodochromic sodalite. The cathodochromic sodalite is prepared by forming an amorphous mass from a mixture of a sodium halide, sodium hydroxide, aluminum oxide and silicon dioxide. The mass is calcined at an elevated temperature so as to drive out hydrated water from the mass. The calcined mass is crushed to a powder and then sintered so as to form crystalline sodalite. The temperature is raised from the initial sintering temperature to 1,000°C or more so as to cause a portion of the sodium halide in the sodalite to be evaporated therefrom thereby resulting in an non-stoichiometric crystal having vacancies in the positions which sodium and halide ions normally occupy in the crystal.

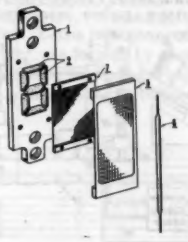
3,705,324

FLUORESCENT DISPLAY TUBES

Mitsuru Masuda, Ise, Japan, assignor to ISE Electronics Corporation, Ise, Japan

Filed Sept. 23, 1971, Ser. No. 183,054
Claims priority, application Japan, Sept. 25, 1970, 45/94834; Sept. 25, 1970, 45/94835
Int. Cl. H01k *7/04*
U.S. Cl. 313—109.5 **5 Claims**

In a fluorescent display tube of the type comprising an insulator base having a plurality of recesses on one surface thereof which are disposed to form selected patterns to be displayed, a phosphor segment and an electrode contained in each recess and a source of electrons for impinging electrons upon the phosphor elements to cause them to luminesce there is provided a relatively low resistance path directly on the surface of the insulator base for draining electrons impinging upon the surface thereof.

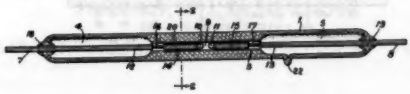


3,705,325

SHORT ARC DISCHARGE LAMP

Helge Austad, Lebanon, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 21, 1971, Ser. No. 108,658
Int. Cl. H01j *61/33*
U.S. Cl. 313—182 **7 Claims**



A xenon arc discharge lamp for short pulse operation includes an elongated quartz tube and a pair of electrodes disposed along the longitudinal axis of the tube. The tube has a central axial bore of a relatively narrow cross section and two longitudinal gas reservoirs of relatively wider cross section disposed at the two outer end portions thereof. Two ends of the electrodes are spacedly disposed in the central bore to provide a short arc discharge gap and the axial bore is so dimensioned that the electrodes fit snugly therein. The electrodes or the internal surface of the axial bore include longitudinally disposed channels or grooves to permit the gas to flow between the arc gap and each reservoir. The discharge lamp of the present design advantageously relieves the high pressure that builds up at the arc discharge gap, replenishes gas into the arc gap as it is depleted by ionization and reduces the sputtering of the arcing surfaces of the electrodes.

3,705,326

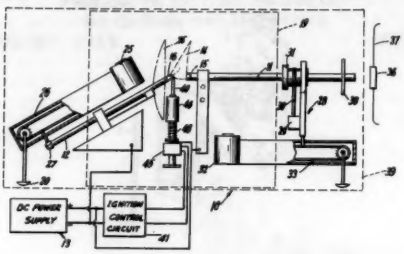
ARC IGNITION SYSTEMS

Bruce E. Ashcraft, and Clarence S. Ashcraft, Jr., both of Williston Park, N.Y., assignors to C. S. Ashcraft Manufacturing Company, Inc., Long Island City, N.Y.

Filed July 30, 1971, Ser. No. 167,645
Int. Cl. H05b *31/30*
U.S. Cl. 314—34 **7 Claims**

An automatic arc striking ignition system is provided for establishing an arc between two electrodes. The system in-

cludes a third arc striking electrode. When the absence of an arc is sensed, the striking electrode is moved into contact with



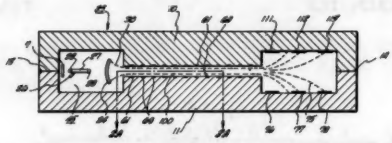
one of the other electrodes. After contact with the other electrode, the striking electrode moves away from the other electrode thereby establishing an arc.

3,705,327

MICROWAVE GENERATOR WITH INTERLEAVED FOCUSING AND INTERACTION STRUCTURES

Allan W. Scott, 1272 Windimer Drive, Los Altos, Calif.

Filed June 2, 1971, Ser. No. 149,191
Int. Cl. H01j *25/34*
U.S. Cl. 315—3.5 **19 Claims**



A microwave generator comprising an electron beam focused by a novel focusing means is described. The lines of the focusing means are interleaved with a microwave interaction structure that assists in the focusing function. Klystron and travelling wave tube configurations are depicted with the interleaved focusing and interaction structures printed on ceramic sheets in one preferred embodiment. The ceramic sheets may be notched around and between the printed lines of the focusing and interaction structures to reduce radio frequency and DC arcing.

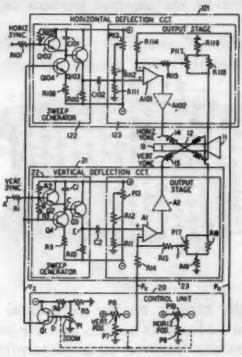
3,705,328

ELECTRONIC ZOOMING IN VIDEO CAMERAS BY CONTROL OF THE DEFLECTION SYSTEM

Gabor Peter Torok, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 1, 1970, Ser. No. 33,784
Int. Cl. H01j *29/70*
U.S. Cl. 315—26 **5 Claims**

Circuitry is disclosed for providing manually controlled electronic size variation (zooming) of the scanned raster in television camera systems. A single control provides a zoom signal which is applied independently to the horizontal and vertical deflection circuits. The zoom signal simultaneously affects the amplitudes of both sweep signals so that the area of the target which is scanned (raster area) maintains a constant aspect ratio while the size of the raster may be varied by the single control. An area of constant size is used to display the



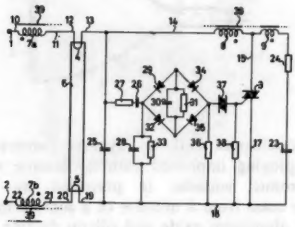
video signals for all camera raster sizes, and zooming is achieved when a portion of the image formed on the camera target is reproduced on the full size display.

3,705,329

STARTING UNIT FOR HEATED GAS DISCHARGE TUBES

Ernst Jakob Vogeli, Friesenbergstrasse 40, Zurich, Switzerland

Filed April 8, 1971, Ser. No. 132,487
Claims priority, application Austria, April 9, 1970, 3284
Int. Cl. H05b *41/18*
U.S. Cl. 315—103 **6 Claims**



A starting unit for heated gas discharge tubes, particularly fluorescent gas tubes which includes a heating circuit containing both tube electrodes and a controlled electronic switch.

3,705,330

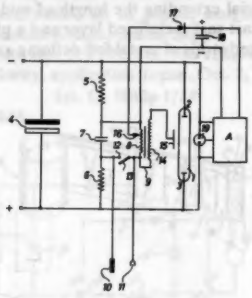
ELECTRONIC FLASH CIRCUIT FOR PHOTOGRAPHY

Otto Rosenberg, Grunwald, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 28, 1970, Ser. No. 6,423
Claims priority, application Germany, Jan. 31, 1969, P 19 04 711.1
Int. Cl. H05b *37/02*
U.S. Cl. 315—149 **6 Claims**

An electronic flash unit has a flash tube ignited through an ignition circuit, and a control circuit with a photoelectric element for receiving the light utilized during a photographic process and terminating the light flash after the light has reached a desired value. The operating voltage for the control circuit is furnished from the ignition circuit of the flash tube

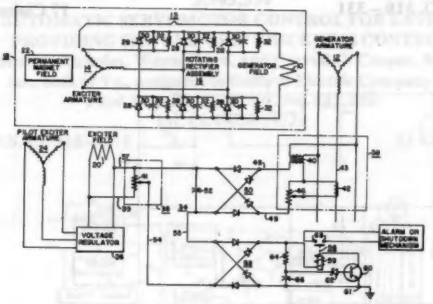
by connecting one end of the primary winding of the ignition transformer and a tap on said transformer to the control circuit in such a way that the voltage between the two points constitutes the operating voltage for the control circuit.



3,705,331
AC GENERATOR SYSTEM INCLUDING DIFFERENTIAL PROTECTION OF EXCITER

William H. South, McKeesport, and Thayer L. Dillman, North Versailles, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 16, 1972, Ser. No. 235,276
Int. Cl. H02h *7/06*
U.S. Cl. 317—13 R **6 Claims**



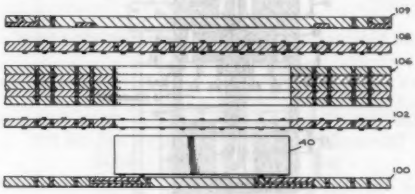
A differential protection system is connected to detect and indicate faults in an exciter by comparing signals developed from the exciter field and from the generator armature. A first signal is developed representing the magnitude of the voltage on the exciter field winding and a second signal is developed representing the vectorial sum of the current and voltage on the armature winding. These signals are compared and a fault indication produced when the magnitude of their difference is at least of a certain value. The differential protection in brushless exciters permits avoiding the use of a fuse in series with each diode of a rotating rectifier.

3,705,332
ELECTRICAL CIRCUIT PACKAGING STRUCTURE AND METHOD OF FABRICATION THEREOF

Howard L. Parks, 23335 Calvert St., Woodland Hills, Calif.

Continuation-in-part of Ser. No. 613,652, Feb. 2, 1967, abandoned. This application June 25, 1970, Ser. No. 49,873
Int. Cl. H05k *1/08, 1/18*
U.S. Cl. 317—101 CM **6 Claims**

An electrical circuit packaging structure and method of fabrication thereof. The packaging structure is comprised of one or more batch fabricated electrically conductive wafers stacked together under pressure to form a parallelpiped structure containing one or more active components (e.g., integrated circuit chips) as well as conductor means providing coaxial interconnections in X-, Y-, and Z-axis directions. A stack is normally comprised of conductive wafers of different types including component wafers, interconnection wafers, and connector wafers. Z-axis interconnections, i.e., through-connections in a wafer, are formed by slugs contained within the wafer profile extending between the top and bottom wafer surfaces. Each slug is surrounded by dielectric material which

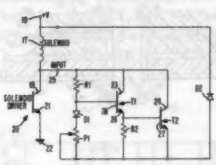


supports the slug and electrically isolates it from the remainder of the wafer material. X–Y axis interconnections are formed by conductors also contained within the wafer profile and surrounded by dielectric material providing support and electrical isolation. The Z-axis slugs and X–Y axis conductors are preferably formed in a wafer by selective chemical etching of the wafer from opposite surfaces thereof. The removed wafer material is replaced with dielectric material to physically support and electrically isolate the slug or conductor from the remaining wafer material.

3,705,333
ADJUSTABLE ACTIVE CLAMP CIRCUIT FOR HIGH SPEED SOLENOID OPERATION

Louis V. Galetto, Apalachin, and David A. Ramsey, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 9, 1972, Ser. No. 224,702
Int. Cl. H01h *47/32*
U.S. Cl. 317—148.5 R **7 Claims**



An adjustable clamp circuit comprising a Darlington switching pair of transistors biased by a voltage divider for permitting the maximizing of a solenoid repetition rate without exceeding the breakdown limit of the solenoid driving transistor.

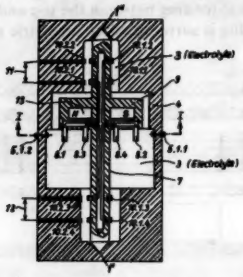
3,705,334
APPARATUS FOR DETERMINING TRANSPOSED COMPONENTS OF A VECTOR

Egidius Arens, Achim; Dieter Muller-Lindemann, and Karl-Friedrich Triebold, both of Bremen, all of Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Dec. 20, 1971, Ser. No. 209,657
Claims priority, application Germany, Dec. 23, 1970, P 20 63 471.3
Int. Cl. H01g *9/00*
U.S. Cl. 317—231 **15 Claims**

An apparatus for reproducing a two-dimensional vector and determining its transposed components in a given coordinate

system. Voltages proportional to the cartesian components of the vector are applied to groups of aligned electrodes cooperating with a common electrolyte so as to electrolytically reproduce the vector by means of the resulting electric



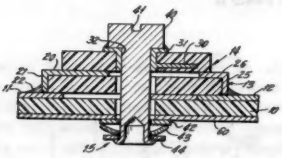
field. The transposed components of the thus reproduced vector are then detected by means of a pickup arrangement including at least three sensors which can be arbitrarily oriented in the plane of the reproduced vector.

3,705,335

LOW HEIGHT CERAMIC CAPACITOR FOR PRINTED CIRCUIT BOARD MOUNTING

Louis G. Metzger, Closter, N.J., assignor to JFD Electronics Corp., Brooklyn, N.Y.

Filed Aug. 19, 1971, Ser. No. 173,117
Int. Cl. H01g 5/06
U.S. Cl. 317—249 D **15 Claims**



A trimmer capacitor having painted conductive leads is soldered directly to appropriate conductive sections of a printed circuit panel. A portion of the adjustment mechanism of the printed circuit board is disposed at least partly within an opening in the printed circuit board so that the capacitor height above the surface of the board is reduced by the thickness of the board. In one disclosed embodiment, the rotor electrode is electrically connected to an electrode on the bottom of the stator body, which electrode is soldered to the printed circuit board. The rotor body has a diameter smaller than that of the stator body and is enclosed by a tubular soldering shield while the capacitor is being connected to the printed circuit board.

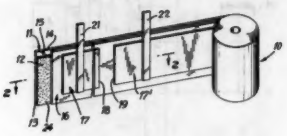
3,705,336

ELECTRIC CAPACITOR UNIT

Abraham G. Kalstein, New Bedford, Mass., assignor to Aerorox Corporation, New Bedford, Mass.

Filed June 17, 1971, Ser. No. 154,085
Int. Cl. H01g 1/14
U.S. Cl. 317—260 **3 Claims**

A capacitor unit incorporating at least two capacitor sections and comprising a strip of dielectric material having a metallized layer electrode thereon extending to one edge of said strip of dielectric material and being spaced from the other edge of said strip of dielectric material, a second strip of dielectric material extending the length of said first strip and positioned against said metallized layer and a plurality of longitudinally spaced strips of metal foil defining a corresponding



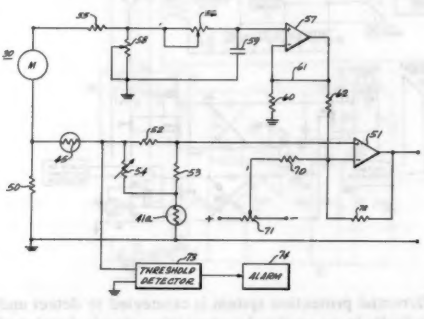
plurality of electrodes to each of which a terminal tab is secured, the various strips and electrodes being wound into a coil and with the end of the coil at which the edges of the convolutions of the metallized electrode is exposed, being metallized and having a terminal tab connected to said metallized end.

3,705,337

MOTOR CONTROL SYSTEM WITH BRIDGE SENSING EMF

Sebastian E. Grabl, Thousand Oaks, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 12, 1970, Ser. No. 80,082
Int. Cl. H02p 5/16
U.S. Cl. 318—331 **17 Claims**



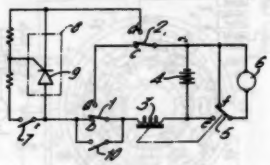
The rotational speed of a motor armature is controlled by sensing the counter EMF of the motor. The motor is excited responsive to the difference between a motor command signal and a feedback signal representative of the motor counter EMF. A temperature sensor changes the feedback signal responsive to changes in the armature temperature. A stream of fluid is directed from the armature to the temperature sensor so as to couple thermally the armature thereof. The feedback signal is generated across the output terminals of a bridge network to the input terminals of which the motor excitation signal is applied. The motor armature comprises one arm of the bridge and the other arms of the bridge are resistive elements of predetermined value. The change in the feedback signal responsive to temperature is effected by a thermistor that has a negative temperature coefficient substantially larger than that of the armature resistance. The thermistor forms part of one of the resistive elements of the bridge. The thermistor is also employed to sense overheating of the motor and discontinuance of the fluid stream. A low-pass filter connected across one output terminal of the bridge compensates for the inductance of the motor.

3,705,338

MOTOR DRIVING SYSTEM FOR A STILL CAMERA

Kayoshi Tsujimoto, Osaka; Yoshio Kuramoto, Toyonaka, and Toshio Kobori, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 5, 1971, Ser. No. 186,640
Claims priority, application Japan, Oct. 7, 1970, 45/88479
Int. Cl. H02p 1/18
U.S. Cl. 318—446 20 Claims



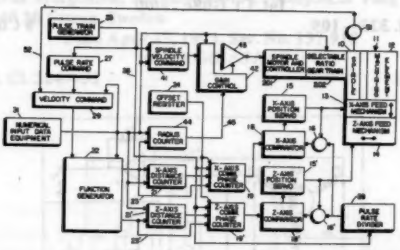
In a still camera, the winding up of its film and the cocking of its shutter is controlled by an electric motor, which is linked to a film winding shaft through a planetary gear system, wherein the shafts of the planetary gears are pivoted to a cam for driving a shutter releasing member and driving a phase-motion switch. The motor is controlled by a relay which is connected to be controlled by a thyristor, the said phase-motion switch and abutton-linked switch, so that the start of the motor is triggered by the thyristor, and timing is exact.

3,705,339

AUTOMATIC SERVOMOTOR CONTROL FOR LATHES PROVIDING SFM AND CHIP THICKNESS CONTROL

John M. Rhoades, Waynesboro, and Carroll C. Cooper, Staunton, both of Va., assignors to General Electric Company

Filed Aug. 22, 1969, Ser. No. 852,255
Int. Cl. G05b 19/24
U.S. Cl. 318—571 21 Claims



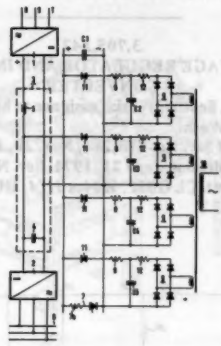
An SFM control for automatically controlled lathes and other turning machines including feed supply means for automatically feeding a part being machined relative to a cutter tool of the lathe along at least one axis of movement. A spindle motor speed control is included for controlling the spindle speed of the lathe and a change-in-radius control is provided for deriving a speed control signal related to the change-in-radius of a part being machined on the automatically controlled lathe. The output speed control signal from the change-in-radius speed control is supplied to control the spindle speed controller whereby the spindle speed of the lathe is adjusted automatically with changes in radius of a part being machined to maintain a desired value of surface feet per minute (SFM) moving past the lathe cutter tool independently of the operation of the feed supply. The control may be operated in an SFM mode with or without chip thickness control or may be operated in an RPM mode with or without chip thickness control.

3,705,340

BUFFER SYSTEM FOR STATIC TRANSVERTERS

Wolfgang Weisser, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 15, 1971, Ser. No. 189,627
Claims priority, application Germany, Oct. 22, 1970, P 20 51 765.1
Int. Cl. H02m 5/40, 5/46
U.S. Cl. 321—2 5 Claims



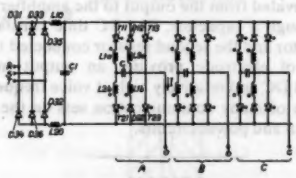
A static transverter, of the type in which semi-conductor controlled rectifiers (thyristors) provide the commutation and in which variation of the direct current link circuit is used to control the output frequency, is provided with a buffer system connected to the direct current link circuit for keeping the transverter in operation during short power failures. Buffer capacitance is distributed in a series of capacitors respectively charged to different voltages by a separate source. These capacitors are connected in parallel to the direct current link circuit through diodes.

3,705,341

INVERTER

Kjell Frank, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed May 7, 1971, Ser. No. 141,175
Claims priority, application Sweden, May 15, 1970, 6689/70
Int. Cl. H02m 7/48
U.S. Cl. 321—5 2 Claims



An inverter is formed of at least one connection group which is connected to and arranged to be fed from a DC source. Such connection group includes two controlled main rectifiers connected in series with each other between the poles of the DC source, with their connection point forming the output terminal for the output voltage. The rectifiers are ignited alternately. There are also two controlled commutating rectifiers forming in series with each other a part of a connection between the two poles of the DC source and alternately ignited to extinguish the main rectifiers. Between the connection point of the main rectifier and a point in said series connection there is a commutating capacitor. An inductive element is connected with the commutating capacitor to form a series oscillating circuit to recharge the capacitor at each

commutation. Limiting rectifiers are connected between each pole of the DC source and the terminal of the commutating capacitor which is connected to the alternating output. The limiting rectifiers have such a polarity that they block for the voltage of the DC source. The inductive element is formed of two reactors each having two windings inductively connected to each other, one of the windings connected in series with a commutating rectifier connected to one pole of the DC source and the other winding in series with a limiting rectifier connected to the other pole of the source.

3,705,342

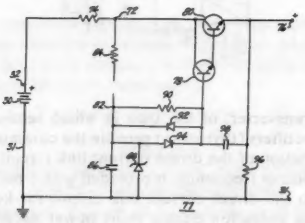
DC VOLTAGE REGULATOR AND IMPEDANCE CONVERTER

James A. Daike, Seattle, Wash., assignor to MetroData Corpration, Seattle, Wash.

Continuation of Ser. No. 878,284, Nov. 20, 1969, abandoned. This application June 21, 1971, Ser. No. 155,179

Int. Cl. G05f ; H04m *1/74*; H02j

U.S. Cl. 323—22 T **12 Claims**



A voltage regulator and impedance converter is interposed in the connections between a DC power supply and an intercom system having common communication and power circuits. The regulator and converter comprises a series connection of a resistor and an amplifier, preferably two transistors connected in a Darlington configuration. The amplifier regulates the DC output voltage under control of a source reference diode which is coupled to the amplifier's control electrode through a pair of limiting diodes and a second resistor. The amplifier is connected as an emitter follower, and the output voltage is regulated at the reference voltage of the reference diode minus the base-emitter voltage drop of the amplifier's transistors. Output transient voltage swings are limited to the forward drops of the limiting diodes. A connection is also provided from the output to the amplifier's control electrode through a capacitor. The RC time constant of the second capacitor and the second resistor connected to the amplifier's control electrode provides an output impedance which is low at DC and relatively high at voice frequencies, allowing the use of many communication sets on the common communication and power circuits.

3,705,343

THREE PHASE ROTARY INDUCTOR VECTOR ADDER

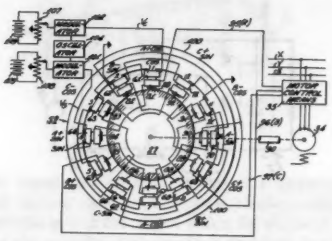
William L. Ringland, 8215 West Edgerton Avenue, Greendale, Wis., and Ernst K. Kaeser, 2204 South 89th Street, West Allis, Wis.

Division of Ser. No. 824,176, May 13, 1969, Pat. No. 3,641,467. This application April 26, 1971, Ser. No. 137,351

Int. Cl. G05f *1/14*

U.S. Cl. 323—48 **19 Claims**

A rotary inductor has an annular stator with angularly displaced radial teeth, an energizing winding having turns encircling individual teeth to induce magnetic fluxes therein, an output winding having turns encircling individual teeth preferably displaced 180 electrical degrees apart connected in subtractive relation to cancel the base component of the magnetic flux, and a ferromagnetic rotor rotatable within the stator to cyclically modulate the permeances of the flux paths extending through the teeth and across the air gap into the rotor and thus cyclically vary the magnitude of the magnetic flux linking the turns of the energizing and output windings encircling each tooth. The preferred embodiment is a three phase vector adder and has two energizing windings having turns surrounding sets of first and second teeth displaced 90 electrical degrees, three phase output winding each of which has turns surrounding individual first teeth and second teeth, the three phase output windings surrounding teeth displaced 120 electrical degrees on the stator, and the rotor being contoured so that the permeances of the magnetic flux paths through the teeth and across the air gap into the rotor vary substantially sinusoidally.



3,705,344

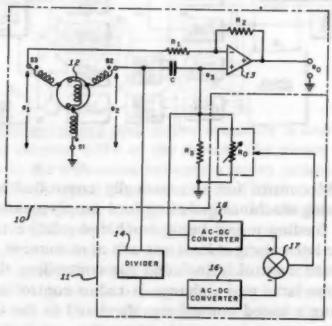
WIDEBAND CONSTANT AMPLITUDE-VARIABLE PHASE CIRCUIT

David A. Espen, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Nov. 8, 1971, Ser. No. 196,294

Int. Cl. G08c *19/00*

U.S. Cl. 323—109 **9 Claims**



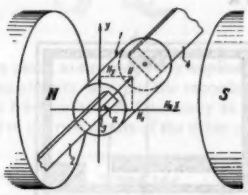
An electronic circuit for converting three-wire synchro-type amplitude modulated carrier frequency signals to an equivalent two-wire constant amplitude-variable phase signal including frequency compensating means for maintaining a prescribed relation between certain resistive and reactive components of the circuit to assure accuracy of the output phase information over a wide range of carrier frequencies and component values.

3,705,345

METHOD OF INVESTIGATION OF ELECTRONIC PARAMAGNETIC RESONANCE

Semen Efimovich Bresler, Lesnoi prospekt, 61, kv. 244; Embek Nikolaevich Kazbekov, prospekt Morisa Toreza, 9, kv. 8, both of Leningrad, and Viktor Nikolaevich Fomichev, prospekt 25 Oktyabrya, 49, kv. 4, Gatchina, Leningradoskoi oblasti, all of U.S.S.R.

Filed Feb. 12, 1970, Ser. No. 10,726
Int. Cl. G01n 27/78
U.S. Cl. 324—0.5 R 2 Claims



A method of investigation of electronic paramagnetic resonance whereby a specimen under test placed within a balanced cavity resonator is exposed simultaneously to an external permanent magnetic field of variable intensity and a microwave field, the magnetic intensity vector of the latter being at an angle of 45° to the intensity vector of the external magnetic field.

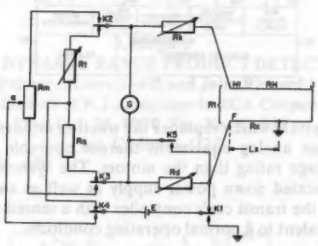
When the conditions for resonance are established, the plane of polarization of microwave oscillations rotates and the measured level of the microwave signal changes.

3,705,346

METHOD FOR MEASURING THE DISTANCE TO A LEAKAGE FAULT IN AN ELECTRICAL CONDUCTOR

Gustaf I. Jedvall, deceased, late of Stockholm, Sweden, and by Arne Morgensen, administrator, Crusebjoerns Vaeg 27, S-140 30 Uttran, Sweden

Filed April 27, 1971, Ser. No. 137,910
Int. Cl. G01r 31/08
U.S. Cl. 324—52 1 Claim



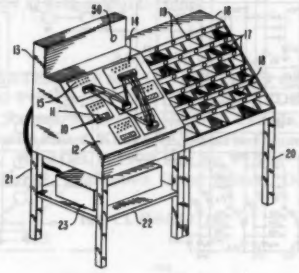
A bridge circuit is calibrated with specific variable resistors set in accordance with the diameter of the faulted conductor and with the temperature of the faulted conductor. The bridge circuit is then modified by shorting out the variable resistor set in accordance with the conductor diameter and by substituting a potentiometer resistor for the two sections of the bridge circuit which make up one loop across the current detector. The potentiometer contact is then adjusted to balance the bridge, and the position of that adjustment is directly calibrated in terms of distance to the fault.

3,705,347

WIRING ASSIST DEVICE FOR USE IN THE FABRICATION OF WIRE HARNESSES

Elry D. Tuller, Detroit, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 21, 1970, Ser. No. 65,909
Int. Cl. G01r 31/02
U.S. Cl. 324—66 11 Claims



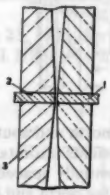
A system for providing a successive step-wise indication of electrical terminals to be interconnected within one or more arrays thereof, where an indication of the next connection to be made is automatically given whenever all preceding connections have been properly made. Any preceding connections becoming faulty during a connecting sequence are indicated by the system one at a time in the required order until all connections are repaired, at which time the next connection to be made in the sequence is indicated.

3,705,348

METHOD OF AND AN APPARATUS FOR DETERMINING THE LENGTH OF FIBERS SUSPENDED IN A LIQUID

Gerardus Henricus Johannus Maria Jacobs, Proost Frederikstraat 21, Meerssen, Netherlands

Continuation of Ser. Nos. 876,155, Dec. 4, 1969, and Ser. No. 682,789, Nov. 14, 1967. This application Dec. 21, 1970, Ser. No. 100,416
Claims priority, application Netherlands, July 31, 1967, 67105
Int. Cl. G01n 27/00
U.S. Cl. 324—71 R 1 Claim



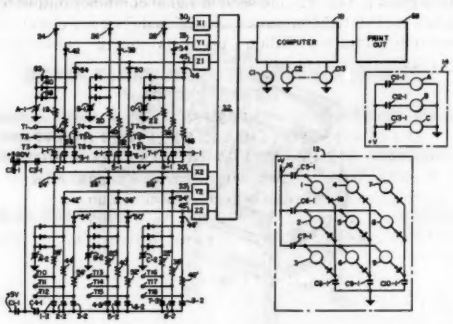
A method of measuring the length of fibers suspended in a liquid which, together with a physical flux, flows through the measuring opening of a measuring device. This device comprises a passage converging toward its exit, with a measuring opening provided at the narrowest point thereof, through which the fibers are passed at a high rate and are held in a stabilized condition without agglomeration and folding.

3,705,349

COMPUTER CONTROLLED WIRING NETWORK TEST SYSTEM

Wayne E. Arnold, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 24, 1969, Ser. No. 860,475
Int. Cl. G01r *15/12, 31/02*
U.S. Cl. 324—73 R 5 Claims



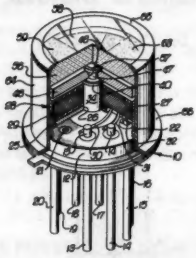
A system wherein a voltage is applied in sequence to a plurality of terminals on a wired panel, and a computer is employed to scan all other terminals on the panel to determine where the applied voltage appears and does not appear, thereby establishing that connections exist between the terminal or terminals to which the voltage was applied and those scanned terminals where the voltage appeared. The computer then compares the resulting voltages with a master wire list and prints-out any wiring errors. The master wire list may be stored in the computer by the operator or the computer may be utilized to analyze an existing panel or wiring network to obtain the same.

3,705,350

ROTARY MAGNETIC DISC CIRCUIT INDICATOR

Robert L. Martin, 959 Calle Collado, Thousand Oaks, Calif.

Filed Feb. 4, 1971, Ser. No. 112,571
Int. Cl. G01r *19/14*
U.S. Cl. 324—133 8 Claims



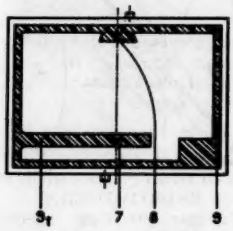
A magnetic disc with north and south poles and with alternating light and dark segments is rotatably mounted adjacent a stator having circumferentially spaced pole elements of like polarity near the respective north and south poles of the magnet. A translucent disc having circumferentially spaced light and dark segments matching the segments of the magnetic element is stationarily mounted over the magnetic element. When the magnetic element is in one position, the dark segments of the magnetic element underlie dark segments of the translucent disc and hence the over-all appearance is one of light and dark segments. When the stator is magnetized by energizing an electric coil mounted within it, the magnet is shifted rotatably a distance sufficient to have the dark segments of the magnet align with light segments of the translucent disc whereupon the over-all appearance of the device is completely dark in contrast with the appearance first mentioned. The difference in appearance is depended upon to indicate the energized or de-energized condition of an electric circuit connected to the coil.

3,705,351

MOVING FRAME MEASURING DEVICE

Jacques Palencher, and Michel Penard, both of Troyes, France, assignors to Societe dite: Lebocey Industrie, Troyes, France

Filed Jan. 25, 1971, Ser. No. 109,147
Int. Cl. G01r *1/16*
U.S. Cl. 324—151 R 3 Claims



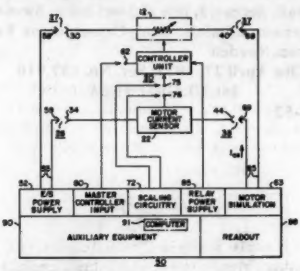
The invention relates to a moving frame measuring device comprising a fixed magnet creating a magnetic field in which a coil carrying an indicating pointer can move, the moving part consisting of a frame, with spindle locating holes, carrying a coil.

3,705,352

TESTING SYSTEM FOR MOTOR DRIVEN APPARATUS

Frank S. Restivo, Randallstown, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 25, 1971, Ser. No. 118,810
Int. Cl. G01r *15/00, 15/12*
U.S. Cl. 324—158 MG 13 Claims



A test system which replaces the traction motors of a transit car with an analog equivalent thereof operable at a much lower voltage rating than the motors. The system provides a similarly scaled down power supply as well as amplifiers for providing the transit car's controller with a sensed motors current equivalent to a normal operating condition.

3,705,353

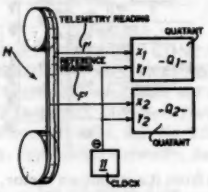
APPARATUS FOR THE TREATMENT OF INFORMATION SIGNALS

Jean-Martial Randoing, Boissise-le-Roi, France, assignor to Centre National D'Etudes Spatiales, Paris, France

Filed July 13, 1970, Ser. No. 54,142
Claims priority, application France, July 16, 1969, 6924195
Int. Cl. H04l *27/10*; G11b *15/52*
U.S. Cl. 325—42 3 Claims

The processing of an information carried by a frequency with the object of digitizing it is performed along the so-called

"quasi-constant" system used in PFM type telemetric data analysis. Two like but distinct circuits each operating in accordance with the "quasi-constant" system are used — the recorded information signal and a fresh reference frequency



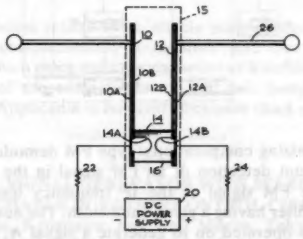
delivered by a clock are respectively applied to the two inputs of one of these circuits, whereas the recorded reference signal and the same fresh reference frequency as above are respectively applied to the two inputs of the other of these circuits.

3,705,354

GENERATION OF HIGH-POWER HIGH-FREQUENCY RADIO IMPULSES

George N. Oetzel, Palo Alto, Calif., assignor to Standard Research Institute, Menlo Park, Calif.

Filed Oct. 2, 1970, Ser. No. 77,457
Int. Cl. H04b *1/04*
U.S. Cl. 325—106 **3 Claims**



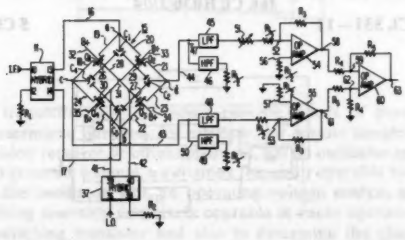
High-power, high-frequency, radio impulses are derived from the energy stored in a low-impedance, resonant transmission line. The energy is discharged by a suitable switching device, generally a spark gap, and the resulting R.F. oscillations are coupled to an antenna.

3,705,355

WIDE DYNAMIC RANGE PRODUCT DETECTOR

Fred Irwin Palmer, Moorestown, and John Richard Fogleboch, Cherry Hill, both of N.J., assignors to RCA Corporation

Filed Oct. 26, 1970, Ser. No. 83,857
Int. Cl. H04b *1/26*
U.S. Cl. 325—450 **6 Claims**



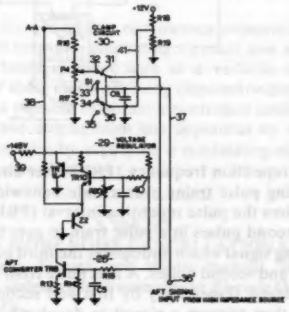
A first signal, having at least one frequency tone, is applied in push-pull to a signal combiner. A second signal is also applied to the signal combiner. The product of the first and second signal at one phase forms a first signal component at a first signal combiner output terminal, a second signal component at the first output terminal being intermodulation products. The product of the first and second signal, 180° out of phase with respect to the first signal component at the first output terminal, forms a first signal component at a second signal combiner output terminal, a second signal component at the second output terminal being intermodulation products. The signals at the first and second signal combiner output terminals are filtered and passed through a difference circuit, the undesired intermodulation products being substantially reduced at the system output terminal.

3,705,356

AFT SYSTEM FOR SIGNAL RECEIVER OF TYPE HAVING TUNER EMPLOYING VARACTOR DIODE

William G. Russell, Kitchener, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada

Filed Oct. 5, 1970, Ser. No. 77,906
Claims priority, application Great Britain, Oct. 7, 1969, 49,151/69
Int. Cl. H04b *1/16*
U.S. Cl. 325—465 **5 Claims**



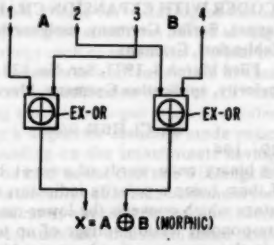
A signal receiver of a type including an AFT network providing an AFT signal and also of a type employing a varactor tuner and a plurality of channel selecting networks for selecting different channels to which the receiver may be tuned has a source of D.C. potential for the channel selecting networks that is regulated by a voltage regulator to which the AFT signal is supplied to change the voltage regulated by the voltage regulator.

3,705,357

MORPHIC EXCLUSIVE-OR CIRCUITS

William C. Carter, Ridgefield, Conn.; Donald C. Jessep, Jr., Poundridge, and Aspi B. Wadia, Chappaqua, both of N.Y., assignors to International Business Machines Coporation, Armonk, N.Y.

Filed March 23, 1971, Ser. No. 127,114
Int. Cl. H03k *19/32, 19/38*
U.S. Cl. 328—93 **7 Claims**



The present invention relates to a logic circuit for testing the condition of a set of self-testing logic variables. More

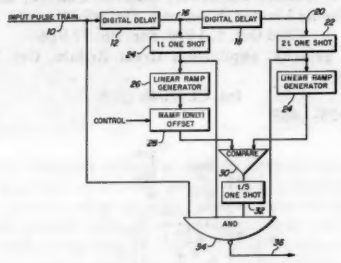
specifically, it relates to such a logic circuit for forming an Exclusive-Or function on such variables. The circuit has particular utility in high reliability systems for checking the conditions of a plurality of line pairs wherein each line pair constitutes a morphic self-testing variable and wherein the circuit output is itself a morphic self-testing function.

3,705,358

DIGITAL PRF FILTER

Weldon W. Bauman, Sunnyvale, and Edward Collins, IV, San Jose, both of Calif., assignors to Itek Corporation, Lexington, Mass.

Filed Aug. 9, 1971, Ser. No. 171,817
Int. Cl. H03k *5/18*
U.S. Cl. 328—110 **11 Claims**



A pulse repetition frequency (PRF) filter circuit for selectively passing pulse trains over a wide bandwidth. The filter circuit utilizes the pulse repetition interval (PRI) between the first and second pulses in a pulse train to gate the third pulse with a gating signal which anticipates the third pulse at the PRI of the first and second pulses. A first pulse from an input pulse train is delayed respectively by first and second fixed delay lines, and then triggers a circuit to develop a first sawtooth wave pattern over a time period 2T. A second pulse from the input pulse train is delayed by only the first delay line, and then triggers a circuit to develop a second sawtooth wave pattern over a time period of T. The second sawtooth wave pattern has a slope twice the slope of the first sawtooth wave pattern. The relationship between the first and second sawtooth wave patterns is such that the point when the amplitudes of both patterns are equal defines the PRI of the pulse train as indicated by the first and second pulses. A comparator circuit compares the amplitudes of the first and second sawtooth wave patterns, and when the amplitudes are equal develops a gating signal which anticipates a third and undelayed pulse at the PRI of the pulse train as indicated by the first and second pulses. The PRF filter circuit filters pulse trains on a random, first-come, first-served basis, and the circuit is time-shared equally among incoming pulse trains within the bandwidth of the circuit.

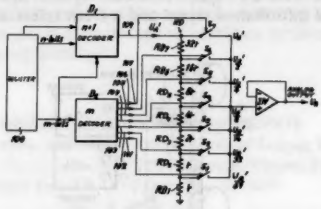
3,705,359

PCM DECODER WITH EXPANSION CHARACTERISTIC

Werner Kappes, Berlin, Germany, assignor to Krone GmbH, Berlin-Zehlendorf, Germany

Filed March 8, 1971, Ser. No. 121,940
Claims priority, application Germany, March 9, 1970, P 20 11 056.9
Int. Cl. H03k *9/00*
U.S. Cl. 329—104 **10 Claims**

Incoming binary code words of $n+m+1$ bits, the highest-ranking of them being a polarity indicator, are fed to a first decoding stage which converts the lower-ranking n-bit group into a corresponding analog voltage of up to 2^n incremental steps and, in the presence of at least one bit of logical value "1" in the higher-ranking m-bit group, superimposes upon this analog voltage a fixed voltage of 2^n incremental steps. A second decoding stage simultaneously receives the m-bit



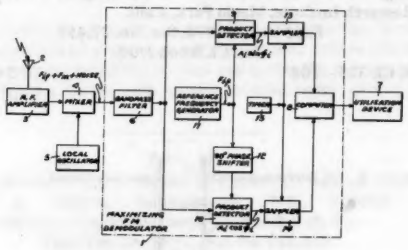
group and derives from it a stepdown factor, ranging from 0 to 2^m, by which a switching circuit controlled by that stage divides the output of the first stage.

3,705,360

FREQUENCY MODULATION DEMODULATION SYSTEM

Gerald Rabow, Nutley, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Continuation of Ser. No. 827,183, May 23, 1969, abandoned.
This application April 1, 1971, Ser. No. 130,502
Int. Cl. H03d *3/00*
U.S. Cl. 329—110 **2 Claims**



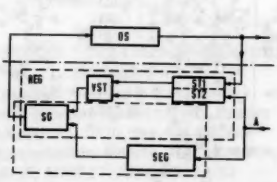
A maximizing computational type FM demodulator to obtain optimum detection of an FM signal in the presence of noise. The FM signal at the IF frequency level is passed through a filter having a given bandwidth. The output signal of the filter is operated on to generate a signal $A_i \sin \phi_i$ and a signal $A_i \cos \phi_i$, where A_i equals the amplitude of the FM signal and ϕ_i equals the phase of an estimated noise with respect to an estimated FM signal for each sample. The signals $A_i \sin \phi_i$ an $A_i \cos \phi_i$ are sampled at a rate equal to the reciprocal of the bandwidth. A computer determines the value of A_i and 100 $_i$ for each sample and produces an output signal for the demodulator the modulating signal with a minimum amount of additive noise.

3,705,361

ARRANGEMENT FOR THE GENERATION OF TIMING PULSES

Guenther Haass, Munich, and Heinz Kurek, Olching, both of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 23, 1971, Ser. No. 165,538
Int. Cl. H03b *3/04*
U.S. Cl. 331—11 **5 Claims**



An arrangement for the generation of timing pulses for a receiver system in which the timing pulses are continuously

synchronized with the pulses (input pulses) supplied by a transmitter system. The frequency of an oscillator which generates the timing pulses is changed in accordance with the phase difference between the timing pulses and the input pulses and in accordance with the frequency of the input pulses

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3,705,362

ASTABLE MULTIVIBRATOR CONTAINING TWO COMPLEMENTARY TRANSISTORS

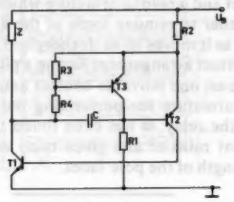
Hans Keller, and Wolfgang Sauer, both of Freiburg, Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Dec. 22, 1971, Ser. No. 210,700

Claims priority, application Germany, Jan. 16, 1971, P 21 02 025.7

Int. Cl. H03k 3/26

U.S. Cl. 331—111 3 Claims



This invention relates to an astable multivibrator provided with two complementary transistors and an additional transistor which discharges the capacitor at a definite time independent of the current gain of said two complementary transistors. Applicable in one-coil electronic clock circuits.

3,705,363

CONTROL SIGNAL GENERATOR WITH SELECTIVELY SWITCHABLE DURATION CONTROL CIRCUIT

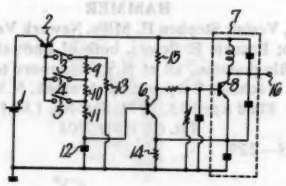
Hisao Okada, Kanagawa, and Koji Morita, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sept. 24, 1971, Ser. No. 183,511

Claims priority, application Japan, Sept. 26, 1970, 45/95471; Sept. 26, 1970, 45/95472

Int. Cl. H03b 3/18

U.S. Cl. 331—174 13 Claims



A transmitter for producing control signals of precisely predetermined duration, for example, for remote control of a television receiver or other apparatus, has an oscillator operable to generate a signal, a switching transistor operable to connect the oscillator with an operating voltage source, and a switching assembly selectively operable to cause operation of the switching transistor and also to determine the charging time constant of a charging circuit by which the period of operation of the oscillator is controlled.

3,705,364

APPARATUS FOR GENERATING MICROWAVES HAVING A GENERATING ELEMENT AND VARIABLE REACTANCE ELEMENT IN A CAVITY RESONATOR

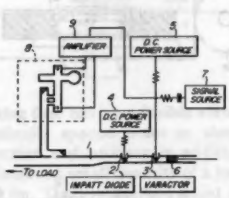
Masumi Takeshima, Takatsuki-shi, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

Filed Sept. 29, 1969, Ser. No. 861,671

Claims priority, application Japan, Oct. 4, 1968, 43/72666

Int. Cl. H03c 3/08

U.S. Cl. 332—18 2 Claims



Apparatus for generating microwaves comprising a cavity resonator, a microwave generating element and a solid-state variable reactance element such as a variable capacitance diode, both of these elements being disposed within the cavity resonator. It is possible to obtain a controlled and/or a modulated microwave output from the apparatus by varying the reactance of and/or by supplying a modulating signal to the variable reactance element.

3,705,365

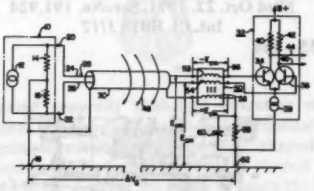
COMMON MODE NOISE CANCELLATION SYSTEM

Andras I. Szabo, Export, and Miklos Sarkozi, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 11, 1971, Ser. No. 114,473

Int. Cl. H04b 3/28, 3/30

U.S. Cl. 333—12 16 Claims



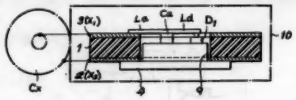
For use with a pair of signal conductors supplying signals to a utilization circuit, means for reducing unwanted common mode noise comprising a transformer device having two highly symmetrical windings each connected at one end to a different one of the two conductors and connected at their opposite ends to an electrical utilization circuit, for example and preferably having a balanced input (such as a differential amplifier) affording a degree of common mode rejection capability. A third winding on the transformer, having the same number of turns as each of the first two windings has supplied to it a voltage substantially equal to the common mode voltage of the signal conductors, whereby the voltages across all three windings will be substantially the same, those across the first two windings acting to oppose and cancel common mode voltages.

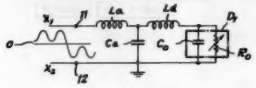
3,705,366

TWO-TERMINAL REACTIVE HYBRID MICROCIRCUIT HAVING CAPACITIVE DIODE TERMINATION

Claude Vergnolle, Limours, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 14, 1970, Ser. No. 97,750
Claims priority, application France, Dec. 16, 1969, 6943511
Int. Cl. H01p 1/18
U.S. Cl. 333—31 R 7 Claims





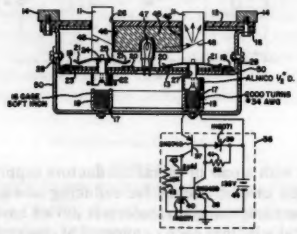
A phase shifter, detector and/or modulator for superhigh-frequency waves includes a two-terminal reactance network whose inductive branches consist of short linear conductors, measuring a small fraction of the free-space wavelength of an oscillation to be controlled, and whose capacitive branch or branches are lumped condensers; the network is terminated in a diode, with or without a large-capacitance series condenser, which can be selectively blocked or unblocked by the application of a suitable biasing potential to vary its impedance between a very high and a very low value. The components of the network are mounted on a conductive block received in a cutout of a two-conductor or three-conductor line strip.

3,705,367

PUSH-BUTTON SWITCH ASSEMBLY

William Peil, North Syracuse; Peter R. Daino, Syracuse, and Lon J. Sauter, Mattydale, all of N.Y., assignors to General Electric Company

Filed Oct. 22, 1971, Ser. No. 191,924
Int. Cl. H01h 3/12
U.S. Cl. 335—186 13 Claims



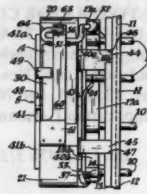
A push-button switch assembly that is suitable for applications requiring a relatively large number of push-button switches and in which no more than one switch is depressed at any one time. The assembly utilizes individual switches which are provided with permanent magnetic elements and a clearing coil which upon energization repels the magnets to clear any previously depressed switches as a new one is depressed. One application of the present invention is in channel selection of an electronically tuned television receiver.

3,705,368

MICROMINIATURE RELAY

Richard H. Williams, Jr., Batesburg, S.C., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed July 23, 1971, Ser. No. 165,626
Int. Cl. H01h 3/60
U.S. Cl. 335—193 12 Claims



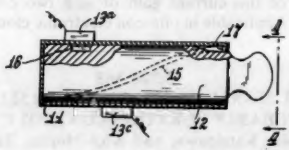
An all-welded hermetically sealed microminiature relay is substantially free of armature bounce. The relay includes an electromagnet and a pivotal armature which is spring biased in a unique manner to remove some of the kinetic energy from the armature as it moves to its deenergized position. The relay includes a contact arrangement having a plurality of fixed contacts and at least one movable contact actuated by the movement of the armature for performing the transfer switching functions of the relay. It has been found that the dropout to pickup current ratio of any given relay may be changed by varying the length of the pole faces.

3,705,369

KEY ACTUATED SWITCH

Wayne C. Schwendeman, Jr., 4708 Garfield, Lisle, Ill.

Filed Nov. 1, 1971, Ser. No. 194,372
Int. Cl. H01h 27/00, 27/06
U.S. Cl. 335—206 4 Claims



Switch means incorporating means to energize an electric circuit upon use of a key of predetermined characteristics but which will energize an alarm system upon use of an improper key, or fail to work at all.

3,705,370

MAGNETICALLY ACTUATED AND RESTORED PRINT HAMMER

Hi D. Chai, Vestal; Stephen H. Mills, Newark Valley; Joseph P. Pawletko; Francis E. Peters, both of Endwell, and Carl T. Young, Binghamton, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed April 15, 1971, Ser. No. 134,176
Int. Cl. H01f 7/08
U.S. Cl. 335—229 5 Claims

A magnetic actuator comprises a three-legged magnetic core with an armature pivotally mounted at the middle leg to

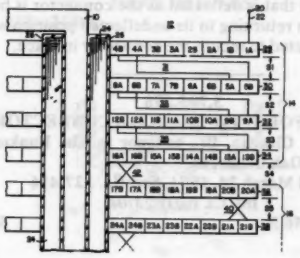
have portions on either side thereof with an abutting gap relation with one outer leg and an abutting plus a peripheral gap relation with the other. A winding on the one abutting leg provides drive flux, and a winding or permanent magnet on the other leg provides a restore or detent flux between teeth on the armature and core.

3,705,371

ELECTRICAL WINDING

Robert I. Van Nice, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 22, 1972, Ser. No. 228,076
Int. Cl. H01f *15/14*
U.S. Cl. 336—70 **7 Claims**



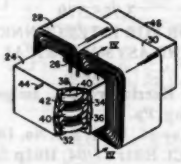
Winding structures having two or more interconnected winding groups. The winding groups have different levels of surge voltage strength, with the group having the highest level being electrically located nearest to a line end of the winding structure. In a first embodiment, the winding group nearest the line end is a single disc winding with the disc spacing adjusted to provide a uniform series capacitance throughout the winding structure. In a second embodiment, an interleaved turn winding group is connected between the winding groups of the first embodiment and the line end of the winding.

3,705,372

CAST-TYPE WINDING STRUCTURE FOR ELECTRICAL INDUCTIVE APPARATUS

Joseph Gotal, Parrell, Pa., and Edmond E. Conner, Brookfield, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 7, 1971, Ser. No. 205,584
Int. Cl. H01f *27/32*
U.S. Cl. 336—182 **6 Claims**



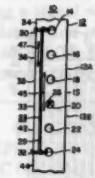
Transformer winding structure having a low-voltage winding, a rubber spool positioned around the low-voltage winding, and a plurality of high-voltage winding sections which are positioned in channels of the spool. The high-voltage winding sections are divided into layers by epoxy impregnated paper insulating strips and the assembly is covered with a filled epoxy resin. The entire structure is encapsulated in a molded rubber casing. The resiliency of the rubber spool relieves stresses in the filled epoxy material.

3,705,373

CURRENT LIMITING FUSE

Frank L. Cameron, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 24, 1971, Ser. No. 146,207
Int. Cl. H01h *85/04*
U.S. Cl. 337—160 **6 Claims**



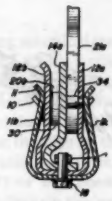
A current limiting fuse having a fusible element with a plurality of longitudinally spaced holes or slots or otherwise reduced cross section and utilizing in addition at least one point along the element a small quantity of a low melting point material, such as tin. The low melting point material and at least a portion of the holes or reduced sections is shunted by a length of high resistance, highly reactive exothermic wire. Since the exothermic wire is close to the main piece of fuse material, the proximate force of the explosion blows out or melts other sections of the main fusible element in the weakened areas near the holes or reduced sections to quickly limit any overcurrent.

3,705,374

MOUNTING MEANS FOR ELECTRICAL SWITCH BLADE AND FOR FUSE BLADE TERMINAL

Harris I. Stanback, Lexington, Ky., assignor to Square D Company, Park Ridge, Ill.

Filed Nov. 17, 1971, Ser. No. 199,646
Int. Cl. H01h *3/00*
U.S. Cl. 337—215 **4 Claims**



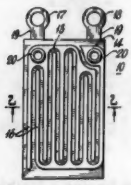
An elongated generally U-shaped mounting member is disposed within a pair of substantially longitudinally aligned U-shaped spring members, and a generally L-shaped mounting member coextensive in length with the U-shaped mounting member has one leg dividing the space between the legs of the U-shaped mounting member and its other leg secured to the bight portion of the U-shaped mounting member. An end portion of a switch blade is disposed within the U-shaped mounting member adjacent one end thereof and on one side of the dividing leg of the L-shaped mounting member. A pivot pin for the switch blade has a shank portion received in bearing relationship in aligned openings provided respectively in one leg of the U-shaped mounting member, in the end portion of the switch blade, and in the dividing leg of the L-shaped mounting member. An enlarged head portion of the pin extends with clearance through an opening in the other leg of the U-shaped mounting member. A leg portion of one of the spring members engages an outer face of the head portion and presses an annular inner face thereof into engagement with the other side of the dividing leg. A blade terminal of a cartridge fuse is disposable within the U-shaped mounting member adjacent the other end thereof and on the other side of the dividing leg.

3,705,375

ELECTRODE FOR ELECTRIC HUMIDITY SENSOR

Abe Hershler, Flushing, N.Y., assignor to Phys-Chemical Research Corp., New York, N.Y.

Filed July 7, 1971, Ser. No. 160,383
Int. Cl. H01c 13/00
U.S. Cl. 338—35 10 Claims



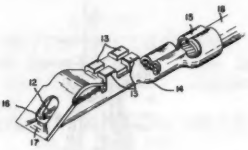
An electric humidity transducer includes a body member coated with a sensing layer having a resistivity responsive to ambient humidity and a pair of spaced thin electrodes adherent to the sensing layer. The electrodes each comprise a porous, flexible, polymeric resin, adhesive binder bonding a mixture of carbon black and graphite. The ratio of carbon black to graphite is between 2:8 and 6:4, and the electrode contains between 7 and 11 parts of the binder and 8 to 12 parts of the carbon black and graphite mixture.

3,705,376

CONNECTOR WITH RELEASABLE SPRING CONTACT AND RELEASING TOOL

Robert John Kinkaid, New Cumberland, and John Carl Asick, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 25, 1970, Ser. No. 92,742
Int. Cl. H01r 11/20, 13/20
U.S. Cl. 339—30 11 Claims



A connector assembly including a contact body having a crimped wire barrel portion and a channel portion with a finger-like spring mounted on the channel portion. An opening near a free end of the spring is located opposite one end of the channel permitting insertion of a conductive post through the opening and into the channel. The spring is appropriately biased to bite the post along one edge of the opening while releasing the post by use of a tool which applies a force at the end of the spring in the direction of the channel.

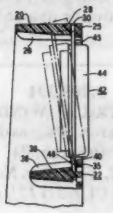
3,705,377

RECEPTACLE FOR SNAP-IN MOUNTING OF CONNECTORS

Eric Lowell Hansen, Westminster; Larry Benjamin McNoldy, Broomfield, and Karl-Heinz Pohl, Boulder, all of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 100,010
Int. Cl. H01r
U.S. Cl. 339—121 2 Claims

A receptacle for mounting connectors including a pair of opposed flange portions and a plurality of contacts intermediate the flange portions. The receptacle includes a pair of spaced parallel walls between which the connector is positioned, each wall including elements defining a slot for accommodating the end of one of the flange portions of the connector. The slot elements of one of the walls includes an integral cantilever beam that is deflected as the connector is being inserted, the beam returning to its undeflected position when insertion is completed to secure the connector in place.

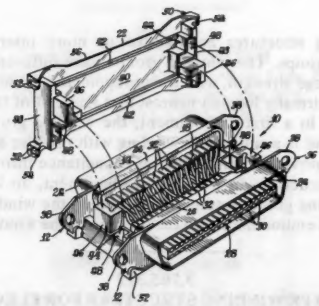


3,705,378

COVER FOR FEED-THROUGH CONNECTOR

Luejene Elkins, Chicago, Ill., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed March 24, 1971, Ser. No. 127,456
Int. Cl. H01r 23/02
U.S. Cl. 339—156 R 5 Claims



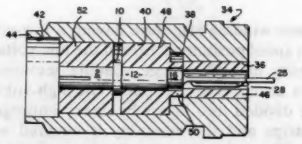
In a double-ended, or feed-through, connector wherein a pair of connector members are arranged back-to-back, for reception of cable plugs, a pair of preformed covers, such as of plastic, of identical construction having elements symmetrically arranged, and fitted on opposite sides of the connector members, frictionally fitted together, and together enclosing the space between the connector members and the connecting elements in that space.

3,705,379

CONNECTOR FOR INTERCONNECTION OF SYMMETRICAL AND ASYMMETRICAL TRANSMISSION LINES

Jerry Hench Bogar, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 14, 1971, Ser. No. 143,364
Int. Cl. H01r 17/04; H01p 5/10
U.S. Cl. 339—177 R 3 Claims



An electrical terminal includes an extended tab for registration with the conductor of an asymmetrical transmission line.

The terminal further includes an offset conductor portion of reduced cross section for connection to the symmetrical transmission line which shapes the normally uniform distribution of electromagnetic energy transmitted over the symmetrical transmission line to a non-uniform distribution which approximates that of the unsymmetrical transmission lines into which the electromagnetic energy is to be transmitted.

3,705,380

METHOD OF INTERCONNECTING PARTS

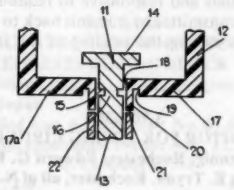
Maurice Roberts, Warwickshire, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Feb. 18, 1971, Ser. No. 116,509

Claims priority, application Great Britain, March 5, 1970, 10,545/70

Int. Cl. H01r 9/08

U.S. Cl. 339—218 R **8 Claims**



In a method of interconnecting a pair of parts at least one of which is thermoplastic, the thermoplastic part has an aperture therein and one surface of the thermoplastic parts has a recess adjacent said aperture, a shoulder being defined between the recess and the aperture. The other parts have a peripheral groove and is positioned in the aperture so that the groove is adjacent the recess in the thermoplastic part and is located between the base of the recess and the one surface of the thermoplastic part. Ultrasonic energy is supplied to the shoulder to cause material from the shoulder to flow into the groove in the other part to interconnect the pair of parts.

3,705,381

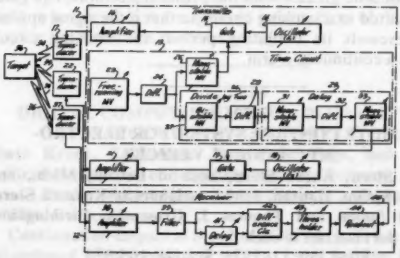
RESONANT TARGET SONAR SYSTEM

Edward L. Pipkin, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy

Filed March 12, 1968, Ser. No. 713,277

Int. Cl. G01s 9/66

U.S. Cl. 340—3 R **11 Claims**



A sonar system having a first broadcaster for generating and broadcasting a predetermined frequency search signal toward a target to be located and classified and a second broadcaster for generating and broadcasting a second signal having a frequency substantially the same as the resonant frequency of the type of target being hunted for effecting the vibration thereof at its resonant frequency. A programmer connected to said first and second broadcasters in such manner as to effect the broadcast of said second signal, so as to vibrate said target a predetermined period of time before, during, and after the broadcast of alternate ones of said search signal. A receiver having a filter for filtering out said second signal after both said search and second signals have been reflected as unmodulated and vibration modulated signals from said target, a delay for delaying said filtered signal an amount such that the unmodulated and modulated portions thereof coincide in time, a subtractor for producing a signal representing the difference between said unmodulated and modulated signals, and a readout for displaying said difference signal in terms of the characteristics of the aforesaid target.

3,705,382

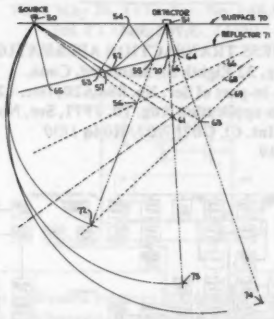
METHODS FOR IMPROVED DECONVOLUTION OF SEISMIC OR SIMILAR DATA

Roy G. Quay, San Antonio, Tex., assignor to Petty Geophysical Engineering Company, San Antonio, Tex.

Filed Feb. 26, 1970, Ser. No. 14,606

Int. Cl. G01v 1/28

U.S. Cl. 340—15.5 CC **6 Claims**



Methods for preparing seismic data to be deconvolved comprise the introduction of a time variable correction based on velocity in the reverberating media and dip at the reverberating boundaries. This invention corrects for angularity in the reverberation path introduced by the detector being remote from the source and for the dips of the boundaries by making the undesired reverberations uniformly repetitive. Either normal movement (NMO) or composite corrections for NMO and dip are used depending on the extent of dip of the reflection boundaries, or the degree to which the refraction boundaries are not parallel, to make the reverberations repetitive in time. The modified data is then deconvolved to remove the repetitive noise and retains the desired signals which are non-repetitive. After deconvolution, a second time variable correction, representing the difference between the NMO correction required for the desired primary reflections and the first time variable correction, is applied. The data is then stacked using horizontal stacking techniques or further processed to provide any other desired form of presentation.

3,705,383

BIOLOGICAL SAMPLE PATTERN ANALYSIS METHOD AND APPARATUS

William W. Frayer, 445 East 69th Street, New York, N.Y.

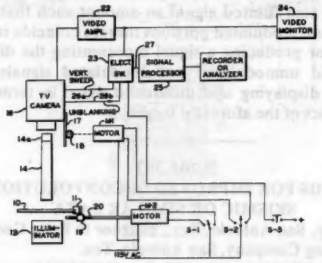
Continuation of Ser. No. 775,233, Nov. 6, 1968, abandoned. This application Aug. 6, 1971, Ser. No. 169,863

Int. Cl. G06k 9/00

U.S. Cl. 340—146.3 R **47 Claims**

Method and apparatus for pattern recognition, and especially leukocyte identification, by optical scanning of a pattern to derive a waveform which is processed to provide one or more histograms defining the scanned pattern in terms of the

frequency of occurrence of elemental areas having various optical transparencies or reflectances, without regard to the spatial arrangement of the various elemental areas. Apparatus for deriving and recording histogram functions in both digital and analog form is disclosed, together with various arrangements



for recording, displaying, and analyzing histogram data values to classify patterns. Also disclosed is a pattern recognition system which utilizes histogram function data values together with spatially-dependent data sensed from the pattern to identify the pattern.

3,705,384

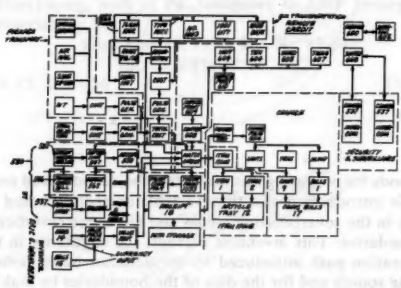
BUSINESS TRANSACTION APPARATUS

Eric C. Wahlberg, 32 Eighth St, Stamford, Conn.

Continuation-in-part of Ser. No. 884,620, Dec. 12, 1969, abandoned. This application Aug. 10, 1971, Ser. No. 170,520

Int. Cl. G07f *7/02;* **H04q** *1/00*

U.S. Cl. 340—149 **14 Claims**



A multiple transaction business machine is provided which includes means for selecting a plurality of transactions, totaling the cost of such transactions and determining the value of payment tendered in satisfaction of the cost of the transactions by payment evaluating means receiving legal tender, credit media and negotiable instruments from the purchaser in tender of satisfaction of the cost of the transactions selected, as well as means for validating the credit media and negotiable instruments presented and means for validating the identity of the purchaser. The machine issues tickets and the like in response to preselection of various modes of transportation, package mailing and handling, etc. A remote data link for the purpose of credit availability verification and purchaser identity is also provided together with remote control, intercom and live identification media.

3,705,385

REMOTE METER READING SYSTEM

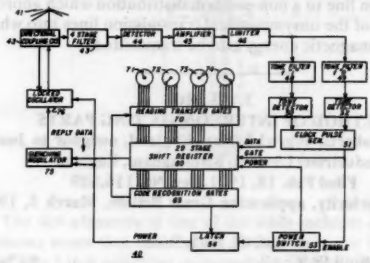
James E. Batz, Northbrook, Ill., assignor to Northern Illinois Gas Company, Aurora, Ill.

Filed Dec. 10, 1969, Ser. No. 883,890

Int. Cl. G01s *9/56;* **H04b** *7/14;* **H04q** *9/12*

U.S. Cl. 340—152 R **49 Claims**

A system for selectively obtaining information from a plurality of remotely located data registers including a mobile or stationary transmitter for transmitting coded signals representing the identification number of a register to be read and a transponder at each register location for receiving the



identification signals and responsive to readout signals transmitted from the transmitter to transmit back to the transmitter data signals representing the reading of the interrogated register.

3,705,386

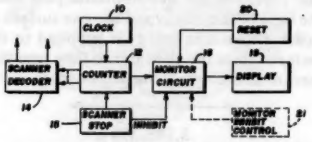
MONITOR FOR TIMING CIRCUITS

Klaus Gueldenpfennig, Rochester; Edward G. Reehil, Henrietta, and Lansing E. Tryon, Rochester, all of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed April 1, 1970, Ser. No. 24,677

Int. Cl. H04q *1/32*

U.S. Cl. 340—167 A **13 Claims**



The input of a pair of gates are connected to a timing circuit, that produces periodic pulses having preset time duration and preset separation, in a manner so that the signals applied to the gates are inverted with respect to the other. One gate is inhibited from responding to the signals for a period of time greater than preset time duration and the other is inhibited for a period of time greater than the preset separation. The gates are connected to a latching circuit so that if the signal applied a gate exceeds its inhibiting period, the latching circuit produces a continuous alarm.

3,705,387

REMOTE CONTROL SYSTEM FOR ELECTRO-MECHANICAL VEHICLE

Kenneth Stern; Karen Stern, both of Detroit, Mich., and Robert Spoon, Hanson, Mich., assignors to Kenneth Stern; Robert Spoon and Thomas J. Grossman, Birmingham, Mich., part interest to each

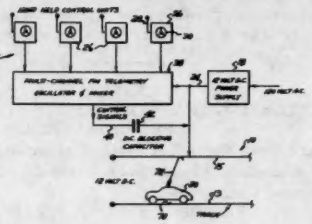
Filed Jan. 11, 1971, Ser. No. 105,333

Int. Cl. A63h *30/04;* **H04b** *7/00;* **H04a** *1/02*

U.S. Cl. 340—171 A **3 Claims**

A remote electronically controlled vehicle which is movable between two conductive tracks; the vehicle is equipped with electrical control devices for steering and driving of the vehicle, which are connected by contacts to the conducting track surfaces; the conducting track is equipped to handle a plurality of these vehicles through a single electronic control unit having a multiple channel FM telemetry circuit including an

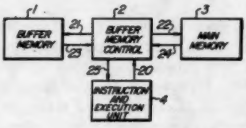
oscillator and mixer circuit; multiple individual manual controls corresponding to the number of vehicles on the conductive tracks can be attached to the control unit for individual independent control of the vehicles on the conductive tracks.



3,705,388
MEMORY CONTROL SYSTEM WHICH ENABLES ACCESS REQUESTS DURING BLOCK TRANSFER

Tetsunori Nishimoto, Hatano, Japan, assignor to Kogyo Gijutsuin, Tokyo, Japan

Filed Aug. 6, 1970, Ser. No. 61,698
Claims priority, application Japan, Aug. 12, 1969, 44/63296
Int. Cl. G06f *13/00*
U.S. Cl. 340—172.5 **3 Claims**



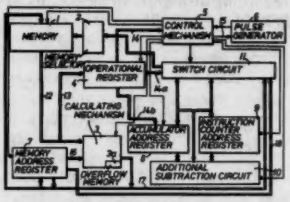
A buffer memory control system for a buffer memory having a shorter access time and a smaller number of memory locations than a main memory. If the requested information is not present in the buffer memory, the block including the requested information is transferred from the main memory to the buffer memory. When a read or write request for the information of another block which is different from the said block is made during the transfer of the latter block, the transfer of the block is interrupted temporarily to immediately effect the reading from or writing in the another block of the buffer memory, after the completion of which the transfer of the block is resumed if the requested information of the another block is present in the buffer memory.

3,705,389
DIGITAL COMPUTER HAVING A PLURALITY OF ACCUMULATOR REGISTERS

Alwin Krock, Zellhausen; Hans-Peter Page, and Joachim Hirschmann, both of Seligenstadt, all of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 152,949, June 14, 1971, abandoned. This application July 14, 1971, Ser. No. 162,502
Claims priority, application Germany, June 12, 1970, P 20 28 931.0
Int. Cl. G06f *9/00*
U.S. Cl. 340—172.5 **8 Claims**

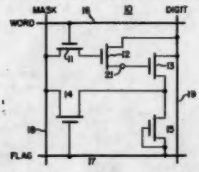
In a programmable digital computer containing a plurality of accumulator registers, an accumulator address register for placing one accumulator register or another into operation, a plurality of instruction counters and an instruction counter address register for selectively operating one instruction counter or another, an addition/subtraction circuit is provided for automatically adding or subtracting unity to the number in the accumulator address register and/or the instruction counter address register in dependence on the contents of the address part of the program instruction words.



3,705,390
CONTENT ADDRESSED MEMORY CELL WITH SELECTIVE BIT WRITING

Joseph L. Mundy, Schenectady, N.Y., assignor to General Electric Company

Filed May 26, 1971, Ser. No. 146,967
Int. Cl. G11c *11/40, 15/00*
U.S. Cl. 340—173 AM **10 Claims**

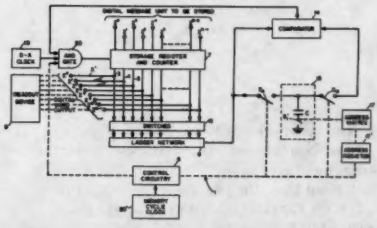


A content addressed memory is disclosed in which the information may be changed or stored on a bit-by-bit basis rather than on a word-by-word basis. This is accomplished by utilizing a cascading circuit arrangement in which the storage node of the charge storage memory is isolated from the "word" line by at least one, intermediate, isolated node. In addition, the exclusive-OR function used to obtain a content addressed memory is achieved utilizing the storage transistor and only two additional transistors in each memory cell.

3,705,391
MEMORY SYSTEM EMPLOYING CAPACITANCE STORAGE MEANS

Richard H. Baker, Bedford, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 797,953, Feb. 10, 1969. This application Oct. 22, 1971, Ser. No. 191,913
Int. Cl. G11c *11/24, 7/00, 11/42*
U.S. Cl. 340—173 CA **15 Claims**



Memory apparatus is disclosed wherein digital information in the form of message units is stored in capacitance arrays.

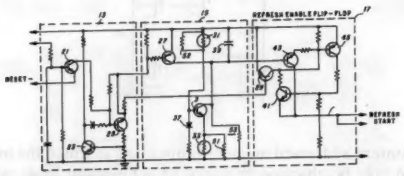
Each message unit is converted to an M-level voltage determined by the bit content of the unit and the M-level voltage is transferred to an individual capacitance for storage; once information has been stored, the power to the system can be removed. Appropriately programmed switching enables the storage of many message units sequentially upon individual capacitances. Small physical size requirements of the memory for preferred uses as well as reliability of the switch system are met by field effect transistors which, however, allow charge leakage from the capacitances. It is necessary, therefore, that the memory periodically be updated or restored. Updating is effected by feeding the M-level voltage signals on the capacitances individually and sequentially to one input of a comparator and feeding to the other input thereof an analog signal representing the lowest number of bits greater than or equal to the message unit represented by the displayed signal on the particular capacitance. The analog signal thus determined is then connected to the particular capacitance and/or the digital message unit from which the analog signal is derived can be passed to a readout device. The memory has other uses, one of which, that of image pickup in a solid state camera, is discussed in detail.

3,705,392

MOS DYNAMIC MEMORY

Daren Ray Appelt, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 7, 1971, Ser. No. 177,975
Int. Cl. G11c *11/24, 11/40*
U.S. Cl. 340—173 R **6 Claims**



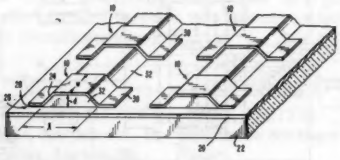
An MOS memory array has a number of memory cells fabricated on a single chip. A refresh control sensor senses the temperature of the environment of the MOS memory array. The MOS memory array is refreshed depending upon the environmental temperature of the memory array. This allows a minimum power consumption in the standby mode of the MOS dynamic memory.

3,705,393

SUPERCONDUCTING MEMORY ARRAY USING WEAK LINKS

Wilhelm Anacker, Yorktown Heights, and Hans H. Zappe, Granite Springs, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1970, Ser. No. 51,057
Int. Cl. G11c *11/44, 5/02*
U.S. Cl. 340—173.1 **26 Claims**



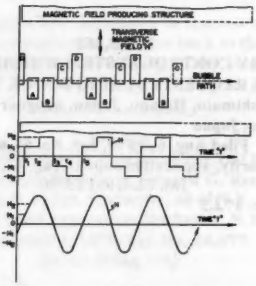
A superconducting memory array where the memory cells are superconducting rings, each of which has at least one element therein capable of supporting Josephson tunneling current. Coincident currents are used to trap flux in the rings, and to release the trapped flux for readout of the memory cells. Fast operation and tolerable limits on drive currents are possible if one flux quantum operation is used. To achieve single flux quantum operation, the capacitance, inductance, and damping of each memory cell must be within certain limits.

3,705,394

OSCILLATING TRANSVERSE FIELD BUBBLE DOMAIN PROPAGATION

Edward Della Torre, Toronto 165, Ontario, Canada, assignor to Canadian Patents and Development Ltd., Ottawa, Ontario, Canada

Filed Oct. 4, 1971, Ser. No. 186,199
Int. Cl. G11c *19/00, 11/14*
U.S. Cl. 340—174 TF **3 Claims**



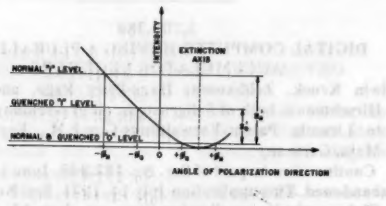
A bubble domain propagation circuit made up of an overlay pattern of bars of different shapes such that their differing demagnetizing fields make them vary in the magnetic field strength required to reverse their magnetic polarities. The preferred arrangement comprises a series of bars formed of films of material having magnetic proportions e.g. permalloy overlying the film containing the bubbles. The arrangement is made up of long and short bars with the bubbles moving from the vicinity of one bar to the next on application of a suitably shaped varying transverse field. In the simplest arrangement the bars are alternately long and short and the transverse field is a sine wave.

3,705,395

MAGNETO-OPTIC READOUT SYSTEM

Roger L. Aagard, Minneapolis, and Francis M. Schmit, St. Louis Park, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 3, 1971, Ser. No. 139,422
Int. Cl. G11c *11/42*
U.S. Cl. 340—174 YC **5 Claims**



In an optical mass memory utilizing Curie point writing, information is stored on a manganese bismuth film having low and high temperature crystallographic phases. The Kerr or Faraday magneto-optic rotation angle exhibited by a region of manganese bismuth having a low temperature crystallographic phase is different from the magneto-optic rotation angle exhibited by a region having the high temperature crystallographic phase. The magnetization direction of a region is

sensed independent of the crystallographic phase. A magneto-optic readout system is utilized in which the extinction axis of the analyzer is set at an angle between the low temperature and the high temperature phase magneto-optic rotation angles for a "0" bit. Therefore the output from a low temperature "0" bit is identical to that of a high temperature phase "0" bit.

3,705,396

DRIVE MECHANISM FOR USE WITH INFORMATION CARDS

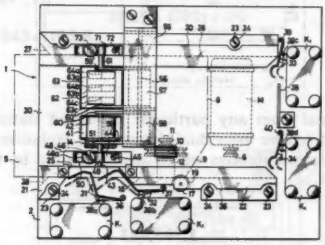
Takehiro Nagaki, Tokyo, and Teruo Yamamoto, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 27, 1971, Ser. No. 147,546

Claims priority, application Japan, June 5, 1970, 45/56073

Int. Cl. G11b *19/02*

U.S. Cl. 340—174.1 C **7 Claims**



An information card drive mechanism comprising a pinch roller and a capstan driven by a motor for selectively driving the information card in one of two predetermined directions and at least three switches and an electronic logic circuit for controlling the driving direction of the motor.

3,705,397

SELF-ADJUSTING SUPPORTING MEMBER HAVING A MAGNETIC HEAD

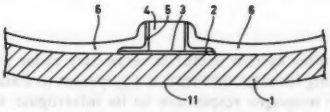
Jan T. Gerkema, Emmasingel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,393

Claims priority, application Netherlands, Nov. 7, 1969, 6916800; Oct. 16, 1970, 7015194

Int. Cl. G11b *5/60*

U.S. Cl. 340—174.1 E **3 Claims**



In hydrodynamically operating suspension devices which have for their object to keep a magnetic head at a constant distance from a rotating memory disk, the magnetic head was so far incorporated in the lower side of a flexible rubber or plastic box. The head is now incorporated in a diaphragm of a ductile metal. A diaphragm with incorporated head is manufactured by pressing the head on a polished mould, by the electroless and/or electrolytic deposition of metal on the sides of the head and the adjoining part of the mould, and finally by stripping the assembly from the mould.

3,705,398

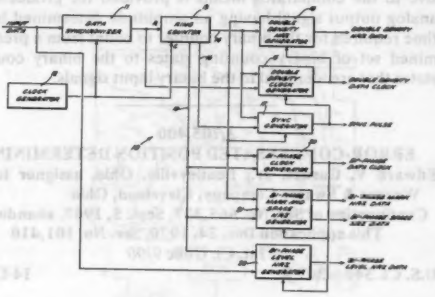
DIGITAL FORMAT CONVERTER

Ronald F. Kostenbauer, and James P. Welch, both of Glendora, Calif., assignors to Odetics, Inc., Anaheim, Calif.

Filed Aug. 11, 1970, Ser. No. 62,954

Int. Cl. H03k *13/24*

U.S. Cl. 340—347 DD **31 Claims**



Apparatus for converting serial digital data which is phase encoded in accordance with any bi-phase or double density format to its NRZ format equivalent accompanied by a coherent clock signal. The input data and a train of clock pulses are applied to a data synchronizer which generates a first pulse for each leading and trailing edge transition of the input data in synchronism with the clock pulses. A ring counter driven by the clock pulses generates a series of second pulses in accordance with a predetermined time sequence, the first pulses being applied to the ring counter to restart the time sequence, whereby the output of the ring counter is indicative of the absence of a transition of the input data for a predetermined time period. The first and second pulses are applied to a flip-flop which changes state upon the occurrence of a first or a second pulse, the output of the flip-flop comprising a coherent clock signal. The first and second pulses and the clock signal are applied to logic circuitry which generates the NRZ format equivalent of the input data for all bi-phase and double density formats.

3,705,399

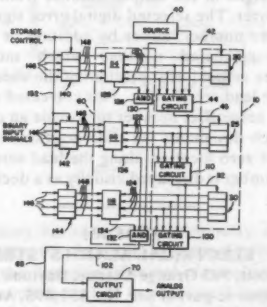
DIGITAL TO ANALOG CONVERTER

William M. Hawkins, Hockessin, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 9, 1970, Ser. No. 96,440

Int. Cl. H03k *13/02, 21/06*

U.S. Cl. 340—347 DA **16 Claims**



A digital to analog converter is provided for converting a set of binary input signals into an analog signal having an amplitude determined by the binary input signals. The converter includes a binary counter comprising a plurality of groups of

binary counting stages connected in series and operable in predetermined counting sequences. Circuit means are provided for synchronizing the operation of the groups of binary counting stages with a source of timing pulses. The converter also includes comparator means for comparing the set of binary input signals with the signals (binary counting states) produced by the binary counter and producing an output pulse when the signals are identical. An output circuit responsive to the comparator means is provided for producing an analog output signal having an amplitude determined by the time required for the binary counter to count from a predetermined set of binary counting states to the binary counting states that are identical to the binary input signals.

3,705,400

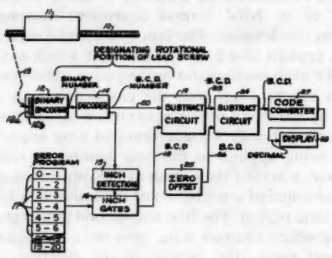
ERROR-COMPENSATED POSITION DETERMINING

Edward V. Cordes, Jr., Bentleyville, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Continuation of Ser. No. 665,337, Sept. 5, 1967, abandoned. This application Dec. 24, 1970, Ser. No. 101,410

Int. Cl. G08c *9/00*

U.S. Cl. 340—347 R **14 Claims**



The present system determines the linear position of a machine tool slide driven by a lead screw. The rotational position of the lead screw is sensed by an analog-to-digital converter which produces a number designating the nominal linear position of the slide corresponding to the sensed rotational position of the lead screw. The system has an error program containing, for each one-inch increment along the lead screw, a digital error signal which represents the mean deviation between the slide's actual position and its nominal position for that increment of the slide travel. The proper error signal is selected from this program in response to the inch-designating digits in the output number from the analog-to-digital converter. The selected digital error signal is combined with the latter number, either by addition or subtraction, to produce a corrected number which more accurately designates the actual linear position of the slide, thereby compensating for lead screw error. This corrected number is combined with a zero offset number to provide an offset-corrected number which designates the slide position with respect to a chosen offset zero location along the lead screw. This offset-corrected number is displayed visually as a decimal number.

3,705,401

ELECTRICAL ALARM SYSTEM

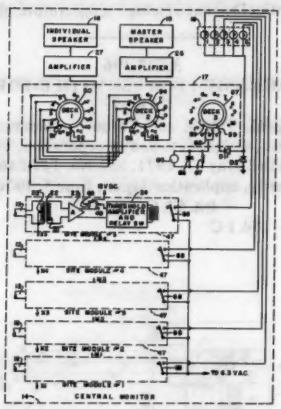
Francis A. Scott, 863 Orange Avenue, Daytona Beach, Fla.

Continuation-in-part of Ser. No. 851,895, Aug. 21, 1969, abandoned. This application Feb. 11, 1972, Ser. No. 225,401

Int. Cl. G08b *19/00*

U.S. Cl. 340—412 **18 Claims**

A plurality of protected stations connected by transmission lines to a central monitoring station. Each protected station has a condition sensing device capable of transmitting an abnormal condition signal to the monitoring station where all the protected stations are simultaneously monitored by a master signal detector. The monitoring station also has an individual signal detector and a selector switch so that an abnormal condition signal from any particular protected station may be monitored by the individual detector in exclusion of all the other protected stations which are monitored by the master detector.



3,705,402

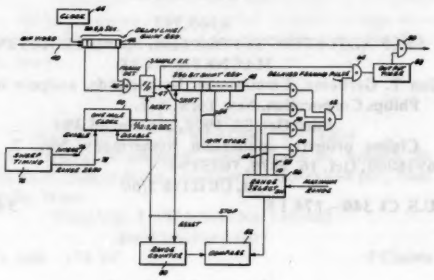
SECONDARY RADAR DEFRUITING SYSTEM

Jack R. Ballantyne, Santa Ana, and Melvin E. Houck, Garden Grove, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 27, 1970, Ser. No. 40,984

Int. Cl. G01s *9/56*

U.S. Cl. 343—6.5 LC **8 Claims**



A defruiter system useful in secondary radar applications for enabling local ground station equipment to distinguish target reply messages responsive to its interrogate signal from reply messages responsive to interrogate signals of remote ground stations. In secondary radar systems, a target transponder may at any one time be within the range of several interrogating ground stations, and therefore may be interrogated by and transmit replies to all of them. At any one ground station, the replies responsive to its own interrogation will appear at the same range during successive sweeps. However, replies initiated by interrogations from remote stations will be at unsynchronized sweep rates and will appear at the one station at different ranges during successive sweeps. This type of interference is referred to as "fruit." The subject defruiter system eliminates this fruit interference by comparing the time occurrence of framing (bracket) pulses during successive sweeps. When framing pulses during two successive

sweeps match in time, then the data bits therebetween are read and the entire reply message is interpreted as being responsive to a local interrogation. Sweep-to-sweep framing pulse comparisons are performed by delaying each received framing pulse by one full sweep interval and then logically gating it with the signal received during the subsequent sweep interval.

3,705,403

RECEIVERS FOR PHASE COMPARISON RADIO NAVIGATION SYSTEMS

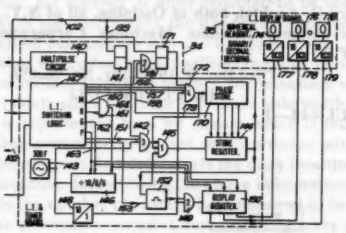
David Geoffrey Hughes, London, England, assignor to Decca Limited, London, England

Filed Nov. 9, 1970, Ser. No. 87,899

Claims priority, application Great Britain, Nov. 10, 1969, 54,972/69

Int. Cl. G01s *1/30*

U.S. Cl. 343—105 R **8 Claims**



In a receiver for a phase comparison radio navigation system, signals of the fifth, sixth, eighth and ninth harmonics of a fundamental are received from different spaced transmitting stations and compared in phase in pairs at their least common multiple frequencies and in which a phase comparison is made between signals from the same pairs of stations at the fundamental frequency to obtain coarser but less ambiguous positional information, the fundamental frequency comparisons are effected digitally measuring the time intervals corresponding to the phase relationships. These time intervals are measured using divided down frequencies from a single clock source, the clock frequency division factors being different for the different pairs of stations so that the counts are proportional to the least common multiple frequencies.

3,705,404

AIRCRAFT CLOCK MONITORING AND TIME PROPAGATING

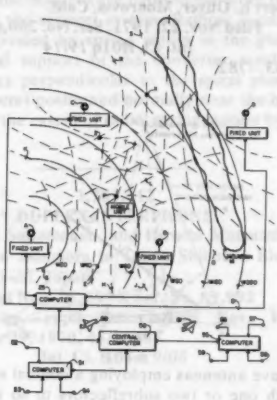
John P. Chisholm, P. O. Box 2122, Olympic Valley, Calif.

Filed Nov. 17, 1969, Ser. No. 877,188

Int. Cl. G01s *5/04*

U.S. Cl. 343—112 R **16 Claims**

A synchronized clock time sharing method and system for navigation and collision avoidance, including multiple fixed position units and multiple mobile units participating by exchange of signals therebetween with reference to their positions in two time propagation grids one comprising families of hyperbolic time difference curves and the other comprising polar coordinate curves. The units use these curves and their



transmissions and their various positions in the grids to monitor each other's clocks and/or establish position in the grid of a selected unit.

3,705,405

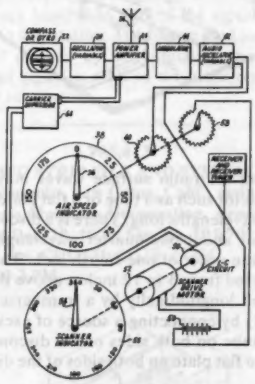
AIRCRAFT PROXIMITY DEVICE

Ray A. Neff, Marshall, Ill., and Dan D. Gowings, Terre Haute, Ind., assignors to Visu-Phonics, Incorporated, Terre Haute, Ind.

Filed March 2, 1970, Ser. No. 15,560

Int. Cl. G08g *3/02*

U.S. Cl. 343—112 CA **4 Claims**

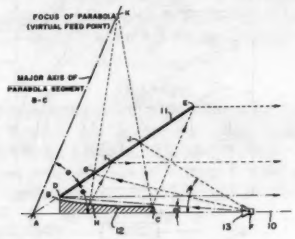


Gyro circuitry, variable oscillator circuitry, and carrier suppressor circuitry for transmitting a carrier frequency determinative of the direction of travel of an object and for suppressing transmission when its receiver is tuned to the same frequency. An air speed indicator ganged with a rheostat, a variable audio oscillator, and a modulator for transmitting an audio tone determinative of the speed of the object. A receiver, a scanner, and tuning circuitry for converting the audio signal received from a traveling object into a visual indication of the direction in which that object is traveling.

3,705,406
MULTIPLE REFLECTION CONICAL MICROWAVE ANTENNA

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by, and Robert E. Oliver, Monrovia, Calif.

Filed Nov. 22, 1971, Ser. No. 200,682
Int. Cl. H01q *19/14*
U.S. Cl. 343—782 **10 Claims**

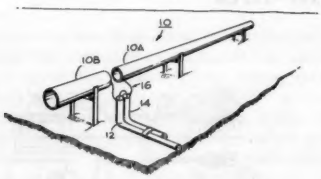


Microwave antennas employing a conical reflector are disclosed with one or two subreflectors to so reflect radiation from a point source feed element that a plane wave front emerges through the antenna aperture with a minimim of blockage of the aperture area by the subreflector(s) and virtually no reflection of radiation back into the feed element.

3,705,407
RADIO SURFACE WAVE ANTENNA

Arthur F. Wickersham, Menlo Park, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed Sept. 21, 1970, Ser. No. 73,712
Int. Cl. H01q *1/48*
U.S. Cl. 343—830 **7 Claims**



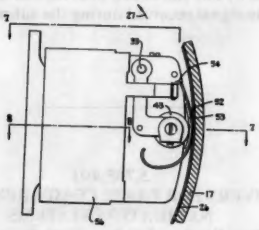
An antenna for radio surface waves may be constructed from a conductor such as a tube or a flat plate which is an even multiple of wavelengths long. There is a discontinuity or gap in the conductor about one-quarter wavelength from one end, which is on the order of one-fourth inch. The antenna is normally supported from 3 to 12 inches above the earth's surface and is excited longitudinally by a transverse electromagnetic mode (TEM) by connecting a source of excitation to the surface of the tube on both sides of the discontinuity, or to the surface of the flat plate on both sides of the discontinuity.

3,705,408
FLEXIBLE SLIDING ADAPTER FOR FACSIMILE RECEIVER STYLUS POSITIONING

Ben W. Krone, 2405 John Drive, Urbana, Ill., and Kenton D. Royer, 907 Meadowview, Tuscola, Ill.

Filed April 15, 1971, Ser. No. 134,345
Int. Cl. G01d *15/00*
U.S. Cl. 346—139 C **15 Claims**

A flexible skid is mounted between pressure-sensitive copy paper, and a follower roller of a transducer holding the paper marking stylus. The skid, held in place by a plate retained on the transducer housing by the magnetic field and pressure-sensitive adhesive, slides on the paper as the transducer traverses

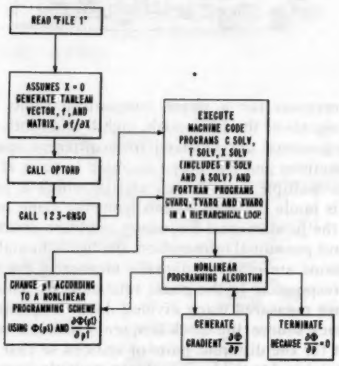


the paper and, while providing the compliance needed for proper stylus functioning, remains comparatively free of dirt accumulation.

3,705,409
TABLEAU NETWORK DESIGN SYSTEM

Robert K. Brayton, Briarcliff Manor; Fred G. Gustavson, and Gary D. Aachtel, both of Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 9, 1970, Ser. No. 96,496
Int. Cl. G06f *15/32*
U.S. Cl. 444—1 **18 Claims**


READ "FILE 1"
ASSUMES X = 0
GENERATE TABLEAU VECTOR, f, AND MATRIX, ∂f/∂X
CALL OPTORD
CALL 123-0850
EXECUTE MACHINE CODE PROGRAMS C SOLV, Y SOLV, X SOLV (INCLUDES B SOLV AND A SOLV) AND FORTRAN PROGRAMS CVARQ, TVARQ AND XVARQ IN A HIERARCHICAL LOOP
NONLINEAR PROGRAMMING ALGORITHM
CHANGE μI ACCORDING TO A NONLINEAR PROGRAMMING SCHEME
USING Φ(μI) AND ∂Φ(μI)/∂μI
GENERATE GRADIENT ∂Φ/∂μ
TERMINATE BECAUSE ∂Φ/∂μ = 0

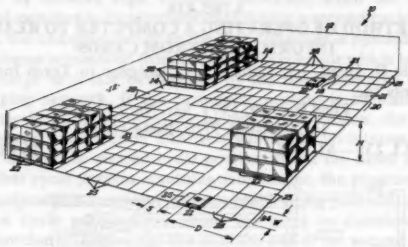
An automated process for network optimization which fully incorporates sparse matrix techniques. The system has further application to any generalized system which may be described mathematically by a set of algebraic and differential equations. Operating on a user input which defines X electrical network, the system generates lists of formated data representing a set of algebraic and differential equations. The variables in the equations are solved for by a process of Crout elimination, and each resulting operation in the Crout algorithm is identified in accordance with one of a plurality of variablility types. Then, a separate Solve program code for each variability type is compiled by the system. The individual Solve programs are then executed in a hierarchical loop sequence during the solution of the network design problem by means of a Newtonian iteration which is expressed as $\delta A(X)/\delta X\ \Delta X = -A(x)$. Where $A(x)$ represents a tableau vector consisting of a set of algebraic and differential equations for the electrical network.

3,705,410

AUTOMATED METHOD FOR OPTIMIZING UTILIZATION OF WAREHOUSE STORAGE SPACE

Elmer D. Kooy, Minnetonka, and Donald L. Peterson, Burnsville, both of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Jan. 21, 1971, Ser. No. 108,497
Int. Cl. G06f *15/24*
U.S. Cl. 444—1 7 Claims



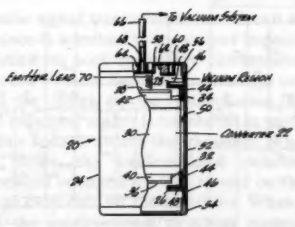
The program of the present invention deals with the following given information: the quantity of units produced in each production run, the number of units expected to be shipped out on a series of successive days, the size of each storage area (the base position occupied by one unit of product, e.g., a pallet), the number of product units (pallets) that can be stored on top of one another (stacking height), the minimum inventory desired (safety stock) and the minimum aisle width. This information is represented by a bit stream which is fed to a data processing system programmed in accordance with the invention. The program first determines the daily inventory on a series of successive days utilizing the above information. The program finds the number of storage bays required to be used on each of the aforesaid successive days assuming a bay depth of from 1 to 10 base positions. The program then selects the bay depth which uses the smallest total floor space. A summary is then made of the total number of bays required and the area at the minimum bay depth. This information is then used by an operator to lay out the warehouse and tells how much total space is required for a particular warehousing operation as well as the effect on storage space caused by changing production schedules or changes in any of the above factors.

3,705,411

SHOCK AND THERMAL ISOLATION PACKAGE FOR THERMIONIC BATTERY

John G. DeSteese, Kennewick, Wash., assignor to McDonnell Douglas Corporation

Filed Dec. 2, 1970, Ser. No. 94,455
Int. Cl. H05k *5/06*
U.S. Cl. 174—17.05 12 Claims



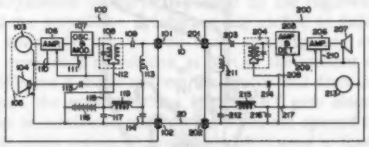
High temperature thermionic energy converter is supported inside a larger evacuated housing by electrically conductive, thin, flat spring means. Both radial and axial support of the converter are provided by a thin, flat spiral spring at each end thereof. Each spring includes a radially inner periphery which engages a corresponding converter end, and radially outer peripheral (finger) sections that engage respective parts of an annular circumferential area of the internal wall of the housing. Narrow curved fingers of each spring provide radial spring action and long thermal leakage paths to minimize the thermal conductance of the support system. Radical location of the converter is provided by spring action in the plane of the spiral, and axial support of the converter results from a diaphragm effect perpendicular to the spiral plane. Spring portions (snubbers) positioned normally near the housing internal wall limit the extent of radial spring motion by engaging such wall.

3,705,412

DUPLEX INTERPHONE

Isao Nakamura, Saitamaken, and Hiroshi Matsuzaki, Tokyo, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd, Kawasaki-shi, Japan

Filed Nov. 16, 1970, Ser. No. 89,992
Claims priority, application Japan, Nov. 19, 1969, 44/109198; June 29, 1970, 45/56387
Int. Cl. H04m *9/08*
U.S. Cl. 179—37 11 Claims



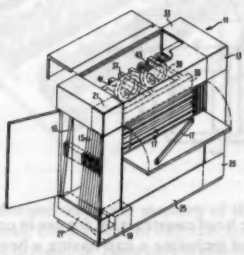
A duplex interphone wherein a master station and substation each having a microphone and a receiver are interconnected through two exclusive communication lines. The audio signal produced by the microphone in the master station is transmitted through said two communication lines in the form of a modulated carrier signal or audio signal. The audio signal produced by the microphone in the sub-station, on the other hand, is transmitted through said two communication lines in the form of a modulated carrier signal or audio signal having a different frequency band than that of the signal transmitted from the master to sub-station. The transmitted audio signal or the audio signal derived by demodulating the transmitted modulated carrier signal is used to drive the receiver in the master station or sub-station.

3,705,413

VIDEO STRIP FILE AND SYSTEM

Donald Harry Cronquist, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,707
Int. Cl. G11b *15/38, 25/04*
U.S. Cl. 179—100.2 PM 4 Claims



A data processing system for storing a large number of tape strips and selectively processing them. The mechanism in-

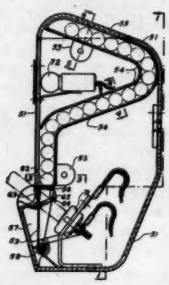
cludes a storage file which has a plurality of elongated slits formed in it. Each of the slits has first and second ends which open outwardly from the file. A data bearing tape strip is cooperatively received by each of the slits for purposes of storage. The first and second ends of each of the slits are coupled together externally of the file by means of a conduit means. A transducer element is disposed in communication with a passageway provided by this conduit means. An air drive mechanism is applicable to each of the slits for exerting a force upon a tape strip located therein to operate the strip from one end to the other of the slit, through the conduit means and past the transducer.

3,705,414

AUTOMOBILE CIGARETTE CASE WITH AN AUTOMATIC ELECTRICAL LIGHTER

Alexander Martin Senkewich, 545 West 164 Street, New York, N.Y.

Filed June 15, 1971, Ser. No. 153,267
Int. Cl. F23g *7/00*
U.S. Cl. 219—262 **14 Claims**



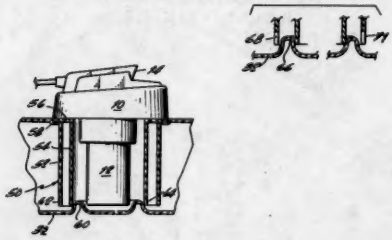
An automobile cigarette case including a storage compartment for cigarettes, an electrical heater for lighting a cigarette and mechanical control means for applying electrical power to the heater and for moving the cigarette to a position where it may be removed by an operator.

3,705,415

VAPORIZER BOWL CONSTRUCTION

Lawrence Katzman, 101 Central Park West, New York, N.Y., and Edward Briggin, 720 East 84th Street, Brooklyn, N.Y.

Filed Feb. 8, 1971, Ser. No. 113,543. The portion of the term of this patent subsequent to Oct. 4, 1988, has been disclaimed.
Int. Cl. H05b *3/60;* **A61m** *15/00*
U.S. Cl. 219—271 **4 Claims**



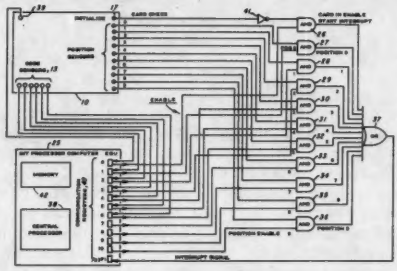
A vaporizer bowl construction for use in combination with a vaporizer head including a cap having a heating chamber depending therefrom and having a steam outlet in communication with the heating chamber. The heating chamber has an opening therein for receiving liquid from the vaporizer bowl. The vaporizer bowl comprises a container having an opening for receiving in suspended relation within the bowl a separable double walled insulating chamber assembly. The heating chamber is removably suspended within the insulating chamber assembly in spaced relation to the inner wall thereof. In one embodiment an upwardly extending rib on the bowl bottom extends between the walls of the insulating chamber to form a bottom closure therefor. In a further embodiment the rib engages the inner wall of the insulating chamber.

3,705,416

METHOD OF OPERATING A COMPUTER TO READ INFORMATION FROM CARDS

Claude D. Head, III, Dallas, Tex., assignor to Texas Instruments Inc.

Filed Dec. 29, 1971, Ser. No. 213,618
Int. Cl. G06k *7/10;* **E04g** *17/00*
U.S. Cl. 235—61.11 E **16 Claims**



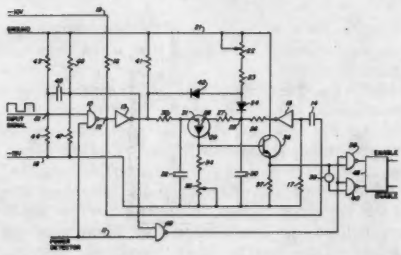
A computer such as a bit-pusher computer is programmed to read information from cards such as punched cards. A plurality of card sensors are utilized to generate interrupt signals and thereby indicate to the computer each time the card is moved to a new position at which information is to be read and a second plurality of sensors reads the information from the cards at each position. In one embodiment, the computer is programmed to read Hollerith code where a plurality of digits or characters are read simultaneously one-code-line at a time as the card is moved across the position indicating sensors. The program also includes the generation of enabling signals for the next position sensor at which information is to be read from the card so that a card passing over a position sensor more than once will not affect the sequence of information being read from the cards.

3,705,417

PULSE RATIO DETECTOR

Daniel R. Asmussen, Kirkland, Wash., assignor to Tel-Tone Corporation, Kirkland, Wash.

Filed Dec. 16, 1971, Ser. No. 208,606
Int. Cl. H03k *5/20*
U.S. Cl. 307—234 **7 Claims**



A circuit is provided which can determine the time duration ratio, within a predetermined range, of the cycle portions of

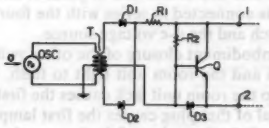
an input signal. First and second capacitors are connected to a programmable unijunction transistor, respectively, between the anode gate and an electrical point and between the anode and the same electrical point. Separate charging networks are in circuit with the two capacitors. A transition of the incoming signal is differentiated and used to momentarily enable a circuit element to discharge the first capacitor which then commences to recharge at a rate determined by the network constants. While the incoming signal remains in the state to which it has switched, the second capacitor is held in the discharged state by another logic element. However, when the input signal switches to its alternate state during a second cycle portion, the charging circuit to the first capacitor is opened, and the clamp is removed from the second capacitor which begins to charge at a rate determined by the time constants of its charging network. If the first cycle portion is substantially shorter in duration than the second cycle portion, the programmable unijunction transistor will fire at an intermediate time during the second cycle portion. If, on the other hand, the first cycle portion is substantially longer, the programmable unijunction transistor will not reach firing potential at all. If the cycle portions are about the same in duration, the unijunction transistor will fire near the end of the second cycle portion, and a signal developed therefrom is logically combined with a clock signal derived from the next succeeding transition of the input signal to store the analysis of the entire cycle by setting a flip-flop which is otherwise reset by either of the asymmetrical conditions. Frequency range and ratios other than 1:1 can be analyzed by correspondingly selecting the circuit time constants.

3,705,418

DIGITAL PULSE SIGNAL TRANSMISSION CIRCUIT

Norito Yoshitake, Kawasaki-shi, Kanagawa-ken; Ryoji Imazeki, Yokohama-shi, Kanagawa-ken, and Hiroshi Ishida, Kawasaki-shi, Kanagawa-ken, all of Japan, assignors to Fujitsu Limited, Kanagawa-ken, Japan

Filed June 18, 1971, Ser. No. 154,496
Claims priority, application Japan, June 22, 1970, 45/54251
Int. Cl. H03k *5/08*
U.S. Cl. 307—237 **3 Claims**



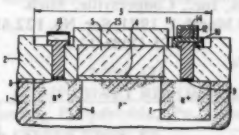
A digital pulse signal transmission line circuit is disclosed whose impedance is matched to the output impedance of the transmitter circuit for both an outflow current and an inflow current. An active element such as a transistor is connected in parallel with the input to the transmission line and a unidirectional switching means is connected in series with said transmission line so as to switch the transistor. When the outflow current flows, the unidirectional switching means generates a forward voltage drop due to said outflow current and this voltage drop cuts off the transistor. When the inflow current flows, the unidirectional switching means is cut off and said inflow current flows through the transistor which becomes conductive and causes the output impedance to decrease. As a result of this, the impedance of the digital pulse signal transmission line circuit is always matched to the output impedance of the transmitter circuit.

3,705,419

SILICON GATE FET-NIOBIUM OXIDE DIODE-MEMORY CELL

Johannes Hartmut Bleher, Nuertingen, Germany; Chi Shih Chang, Wappingers Falls, N.Y., and Robert Charles Dockerty, Highland, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,621
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 R **7 Claims**



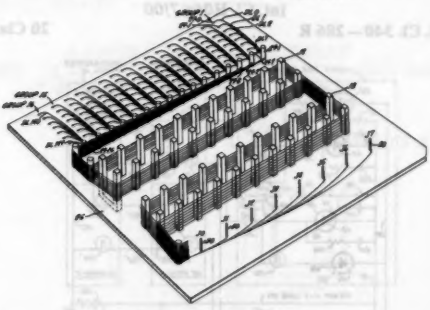
A high density memory cell comprising a silicon gate field effect transistor and a bismuth-niobium oxide-niobium bistable switching diode integrally formed over the drain electrode of the FET. The memory cell is formed by providing an oxidized P⁻ silicon wafer, stripping the oxide from the source, drain and gate region of the FET and regrowing the gate oxide. Polycrystalline silicon is deposited on the regrown gate oxide and the polysilicon is subtractively etched to delineate the gate electrode. Source and drain openings are etched using the remaining polysilicon as part of the etchant mask. An N+ diffusion is made to form the source and drain region and to dope the polycrystalline silicon FET gate electrode. The device is reoxidized and contact holes are opened to the source and drain region. Platinum-silicon is used to form the source and drain ohmic contacts. Niobium is deposited and subtractively etched except over the drain contact. Niobium oxide is formed by a wet anodizing step. Bismuth is deposited and subtractively etched except on the niobium oxide. Aluminum is deposited and subtractively etched to provide conducting pathways for contacting the source and the bismuth electrodes of the memory cell.

3,705,420

CIRCULATING CURRENT MINIMIZATION SCHEME FOR A READ-ONLY MEMORY

Jozef Furst, Mission Viejo, Calif., and J. Kjell Hovik, Irvine, Calif., assignors to Datapac, Incorporated, Santa Ana, Calif.

Filed Aug. 10, 1970, Ser. No. 62,520
Int. Cl. G11c *17/00, 5/04, 11/06*
U.S. Cl. 340—174 SP **3 Claims**



A linear transformer read-only memory of the type having an array of magnetic cores linked in different combinations by a large number of drive lines. Each core is also linked by an individual sense winding. Whenever a particular drive line is pulsed, the resultant current produces an output across the sense windings of those cores which that drive line links.

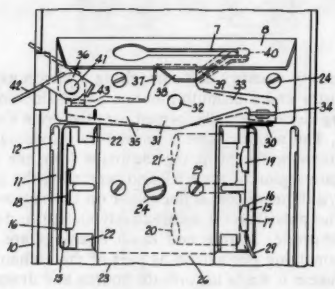
The drive lines are divided into groups with all drive lines of a given group being connected through a common junction point to a source of current. Circulating leakage currents in the drive lines are reduced by making the average physical separation between electrically interconnected drive lines greater than the average physical separation between electrically unconnected drive lines.

3,705,421

CHAIN LOCK WITH SIGNAL FOR DOOR

Frederic B. Vanderveer, Grand Rapids, Mich., assignor to Leigh Products, Inc., Coopersville, Mich.

Filed March 1, 1971, Ser. No. 122,654
Int. Cl. G08b *13/08*
U.S. Cl. 340—274 7 Claims



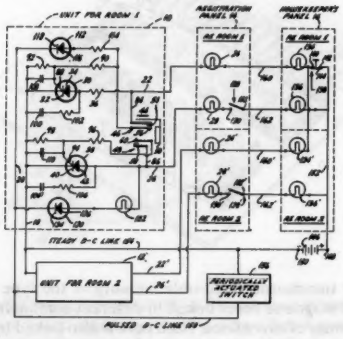
A metal base plate has a keyhole anchor for a door chain and is carried by a mounting plate. A signal lever on the base plate has a flexible ear positioned to be engaged by the anchor knob on the end of the chain. An on-off lever on the base plate selectively locks the signal lever against movement, so that unauthorized movement of the chain and its anchor end either moves the signal lever to complete an alarm circuit, or bends the flexible ear on the signal lever without releasing the chain anchor. The mounting plate carries retainers and contacts for batteries that are connected in circuit with an audio signal on the base plate and a fixed switch contact on the base which coacts with the signal lever.

3,705,422

PANEL ROOM STATUS INDICATOR SYSTEM AND ROOM UNIT THEREFOR

Lenfred L. Savey, Cinniminson, N.J., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed April 1, 1971, Ser. No. 130,222
Int. Cl. H04n *7/00*
U.S. Cl. 340—286 R 20 Claims



A system for providing visual indication at the registration desk of a hotel or motel and in the housekeeper's office thereof, of the status of occupancy, cleanliness and inspection of each guest room of the hotel or motel, and a room unit for such system. The preferred form of room unit comprises a jack including two open-circuited switches the first of which is arranged to be closed by insertion of a short plug in the jack and both of which are arranged to be closed by insertion of a longer plug in the jack. The anode-cathode path of a first silicon controlled rectifier (SCR) is connected in series relationship with a first resistor between one contact of the first switch and a first supply conductor, to which the cathode of the SCR is connected. That conductor provides a negative return path to a d-c constant voltage source. The anode-cathode path of a second SCR is connected between one contact of the second switch and the first supply conductor. A first diode is connected in series relationship with a second resistor of value smaller than that of the first resistor, between the other contact of the first switch and a second supply conductor to which the cathode of the diode is connected. The second supply conductor provides a negative return path to a source of pulsating d-c voltage. A second diode is connected in series relationship with an indicator lamp between the second conductor and the anode of the second SCR, the cathode of the second diode being connected to the second conductor. Respective voltage dividers for applying a triggering voltage to the respective control electrodes of the first and second SCRs are connected from the second contacts of the first and second switches respectively to the first conductor. Third and fourth conductors for making connections to respective indicator lamps in an indicator station of the system are connected to the respective first terminals of the first and second switches.

The indicator system preferably comprises two indicator stations — a panel at the registration desk and another panel at the housekeeper's station. Each of those panels includes two indicator lamps for each room. In one embodiment a first lamp in each panel is connected in series with a first lamp in the other panel, the third conductor of the room unit, and one terminal of a normally closed reset switch the other terminal of which is connected to the positive terminal of the d-c constant voltage source. A second lamp in each panel is connected in series with a second lamp in the other panel, with another switch located in the registration panel, and with the d-c constant voltage source. The negative terminal of the source is connected to the first conductor of the room unit. In addition, to provide pulsating voltage a periodically actuated switch is connected between that negative terminal and the second conductor of the room unit. In another embodiment the first lamps of the two panels are connected in parallel and the parallel combination is connected in series with the reset switch, the third conductor and the d-c voltage source. The second lamps also are connected in parallel and that parallel combination is connected in series with the fourth conductor, the other switch and the d-c voltage source.

In either embodiment closure of the other switch causes the second lamps and the room unit light to flash. Insertion of a short plug into the room unit jack causes the first lamps also to flash. Removal of that plug causes the first lamps to emit constant-intensity light. Insertion of the longer plug into the jack causes the room unit lamp to be extinguished and the second lamps to emit constant-intensity light; this condition continues after removal of the longer plug. Opening of the reset switch causes the first lamps to be extinguished, and opening of the other switch causes the second lamps to be extinguished.

3,705,423

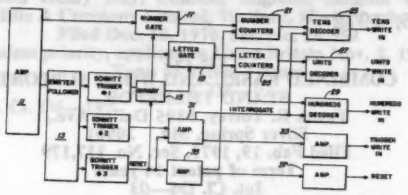
ARRANGEMENT FOR TRANSLATING A TRAIN OF PULSES INTO LOGIC WORDS

Thomas P. Jachimek, Evergreen Park, Ill., and Jack A. Mulford, Springfield, Mo., assignors to Seeburg Corporation, Chicago, Ill.

Filed Feb. 19, 1971, Ser. No. 116,864
Int. Cl. H03r *13/00*
U.S. Cl. 340—347 DD 11 Claims

A train of pulses divided into different sets of pulses has

each set of pulses directed to a different counting and storing arrangement. The counting and storing arrangements are then

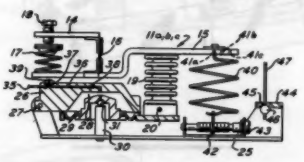


actuated in proper time sequence to yield time spaced logic words incorporating appropriate bits of data.

3,705,424
ELECTRICAL SWITCHING APPARATUS UTILIZING CONDUCTIVITY OF THE HUMAN SKIN
Richard P. Harvey, Jr., 4074 Hitch Blvd., Moorpark, Calif.
Filed March 29, 1971, Ser. No. 129,083
Int. Cl. H04q 3/00
U.S. Cl. 340—365 R **3 Claims**

Apparatus whereby selective closing of a plurality of electrical circuits may be accomplished by slight movement of a human body member, thereby establishing a conductive path through or along the surface of such member. In one embodiment, a plurality of circuit contacts are disposed in circumferential fashion around an annular opening into which an individual's finger is receivable. A slight sidewise movement of the finger in a radial direction effects the closing of a particular one of a plurality of circuits depending on the direction in which the radial movement occurs. Since the individual's hand remains essentially stationary, extremely rapid sequential switching is possible, as only a sidewise movement of one finger is required instead of a complete displacement of this member as in known arrangements. The invention is particularly adapted for use with keyboards, control panels or display devices of any nature where manual manipulation forms an essential part.

3,705,425
STRIP CHART RECORDER
Morton A. Packel, Philadelphia, Pa., assignor to Moore Products, Co., Spring House, Pa.
Filed Oct. 23, 1970, Ser. No. 83,385
Int. Cl. G01d 5/06
U.S. Cl. 346—72 **1 Claim**

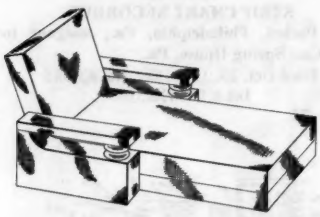


A strip chart recorder of the pneumatic type is disclosed which has a removably mounted chart magazine assembly and drive therefor with a chart rewinding mechanism which maintains the chart in tension. Amplification of the analog pressure signals is provided by a servo operating a bell crank. The pens and associated indicating pointers are gravity urged toward their zero positions.

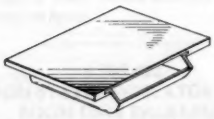
DESIGNS

DECEMBER 5, 1972

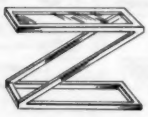
225,289
LOUNGE CHAIR
Howard V. Perno, 10325 Gridley Road, Santa Fe Springs, Calif. 90670
Filed Nov. 27, 1970, Ser. No. 26,185
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—37



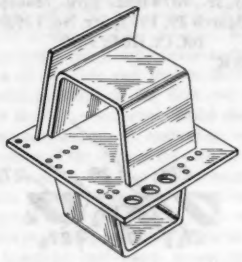
225,290
PORTABLE STUDENT WRITING TRAY
Frank R. Torrey, 9805 Dallas Ave., Silver Spring, Md. 20901
Filed Feb. 19, 1971, Ser. No. 117,199
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—138



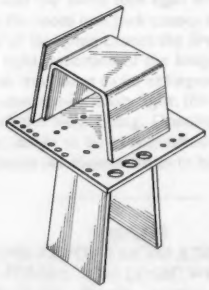
225,291
TABLE OR SIMILAR ARTICLE
Josef Kastner, 124 W. 72nd St., New York, N.Y. 10023
Filed Aug. 31, 1970, Ser. No. 24,772
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



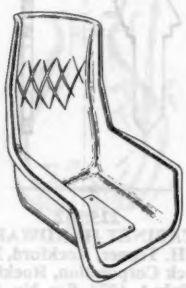
225,292
COMBINED EASEL AND WORK SUPPORT STAND THEREFOR
Frank R. Torrey, 9805 Dallas Ave., Silver Spring, Md. 20901
Filed Feb. 19, 1971, Ser. No. 117,179
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—181



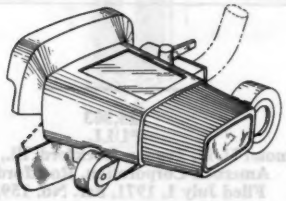
225,293
WORK EASEL
Frank R. Torrey, 9805 Dallas Ave., Silver Spring, Md. 20901
Filed Feb. 19, 1971, Ser. No. 117,198
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—181

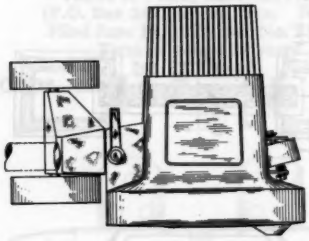


225,294
SHELL CHAIR OR SIMILAR ARTICLE
Ronald Henry Day, London, England, assignor to S. Hille & Company Limited, Watford, Herts, England
Filed Dec. 18, 1970, Ser. No. 26,559
Claims priority, application Great Britain Nov. 2, 1970
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D6—197

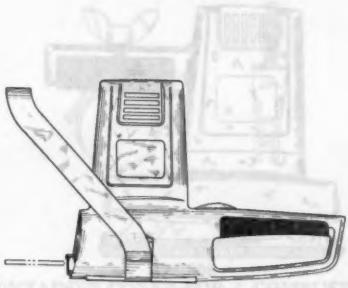


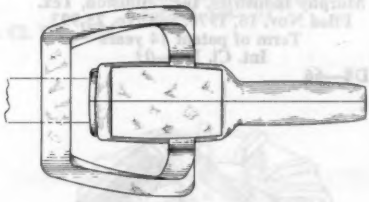
225,295
EDGER-TRIMMER
Melvin H. Boldt, Glenview, Ill., assignor to G. W. Murphy Industries, Inc., Houston, Tex.
Filed Nov. 16, 1970, Ser. No. 25,992
Term of patent 14 years
Int. Cl. D8—*03, 05*
U.S. Cl. D8—8



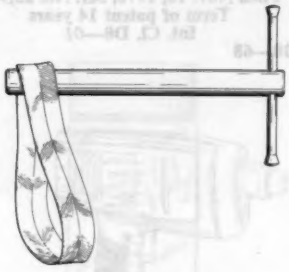


225,296
HEDGE TRIMMER
Melvin H. Boldt, Glenview, Ill., assignor to G. W. Murphy Industries, Inc., Houston, Tex.
Filed Nov. 19, 1970, Ser. No. 26,080
Term of patent 14 years
Int. Cl. D8—*03, 05*
U.S. Cl. D8—8

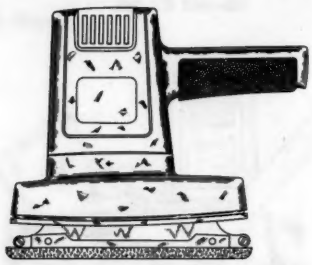




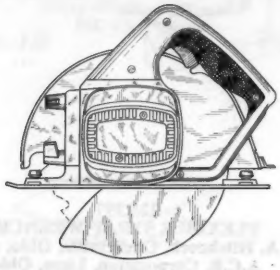
225,297
FLEXIBLE STRAP WRENCH
Arthur A. Hitchcock, Cridersville, Ohio, assignor to A.C.B. Corporation, Lima, Ohio
Filed Nov. 16, 1970, Ser. No. 25,988
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—21



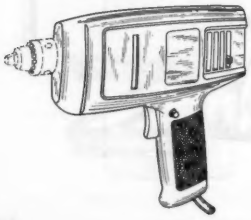
225,298
ORBITAL SANDER
Melvin H. Boldt, Glenview, Ill., assignor to G. W. Murphy Industries, Inc., Houston, Tex.
Filed Oct. 16, 1970, Ser. No. 25,521
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—62



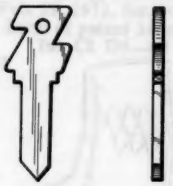
225,299
CIRCULAR SAW
Melvin H. Boldt, Glenview, Ill., assignor to G. W. Murphy Industries, Inc., Houston, Tex.
Filed Nov. 16, 1970, Ser. No. 25,993
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—66



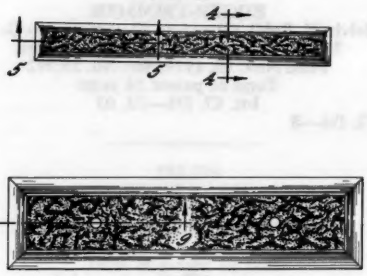
225,300
HAND DRILL
Melvin H. Boldt, Glenview, Ill., assignor to G. W. Murphy Industries, Inc., Houston, Tex.
Filed Nov. 16, 1970, Ser. No. 25,991
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—68



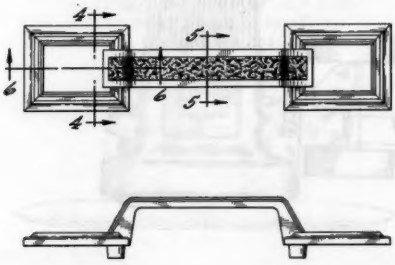
225,301
SET OF ALPHABET KEY BLANKS
Silvio P. Uliano, 57 Walnut St., Lawrence, Mass. 01841
Filed Oct. 2, 1969, Ser. No. 19,373
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—136



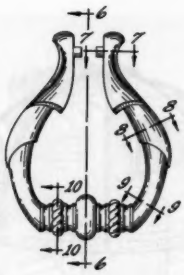
225,302
CABINET HARDWARE
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed July 1, 1971, Ser. No. 159,079
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—166



225,303
PULL
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed July 1, 1971, Ser. No. 159,100
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—174

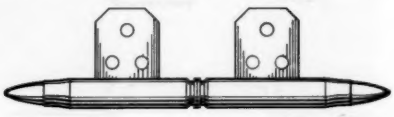


225,304
DOOR KNOCKER
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed June 1, 1971, Ser. No. 149,099
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—177

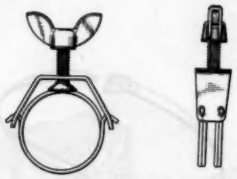


225,305
WALL PLATE
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed May 26, 1969, Ser. No. 17,351
Term of patent 14 years
Int. Cl. D13—*99;* D8—*99*
U.S. Cl. D8—179

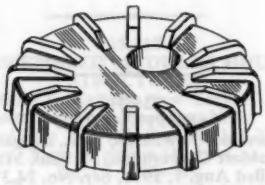
225,306
HINGE FOR CABINETS OR THE LIKE
James L. Pruitt, Bellevue, Nebr. (P.O. Box 262, Strawn, Tex. 76475)
Filed June 18, 1970, Ser. No. 23,563
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—189



225,307
CLAMP FOR CONNECTING TUBULAR MEMBERS
Norio Matsuura, 31 Owada-naka 1-chome, Nishiyodogawa-ku, Osaka, Japan
Filed Nov. 20, 1970, Ser. No. 26,087
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—229



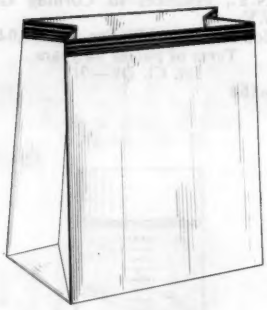
225,308
CONTAINER COVER FOR A COMBUSTION ENGINE VAPOR INJECTOR
Boyd E. Barefoot, 2532 SW. 63, Oklahoma City, Okla. 73159
Filed Dec. 21, 1970, Ser. No. 26,600
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—254



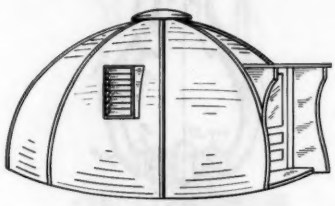
225,309
JAR OR SIMILAR ARTICLE
Sara L. Balbach, New York, and Richard W. Greger, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed July 20, 1970, Ser. No. 24,040
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—164

225,310
COMBINED KEG AND CARRYING STRAP THEREFOR
Patricia E. McClain, 509 N. Jefferson, Mascoutah, Ill. 62258
Filed Dec. 24, 1970, Ser. No. 26,638
Term of patent 14 years
Int. Cl. D9—*02*
U.S. Cl. D9—170

225,311
SHOPPING BAG
Robert E. Harrison, Newburgh, N.Y., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.
Filed Aug. 7, 1970, Ser. No. 24,378
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—249

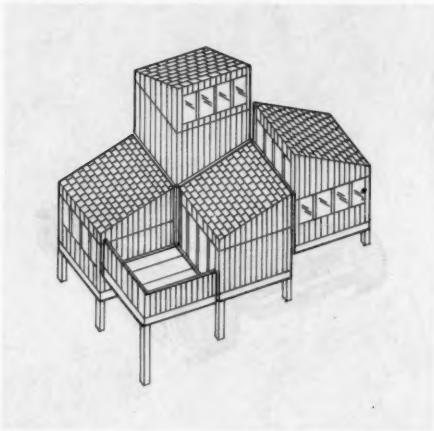


225,312
PREFABRICATED MOLDED BUILDING
Cliff Chamlee, 4011 E. 37th St., Odessa, Tex. 79760
Filed Jan. 25, 1971, Ser. No. 109,755
Term of Patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

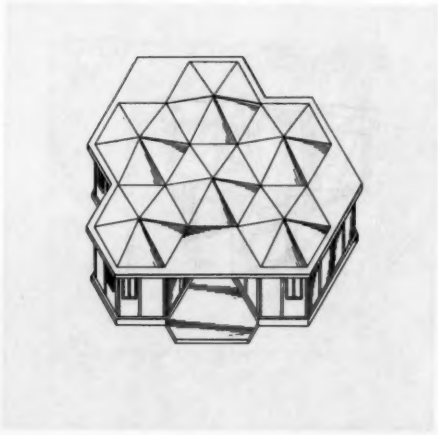


225,313
PRE-ASSEMBLED MODULAR HOUSING STRUCTURE
Edward D. Kelbish, New York, N.Y. (280 Vanderbilt Ave., Brooklyn, N.Y. 11205)
Filed Mar. 16, 1971, Ser. No. 125,021
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

225,314
PRE-ASSEMBLED MODULAR HOUSING STRUCTURE
Edward D. Kelbish, New York, N.Y.
(280 Vanderbilt Ave., Brooklyn, N.Y. 11205)
Filed Mar. 16, 1971, Ser. No. 125,022
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

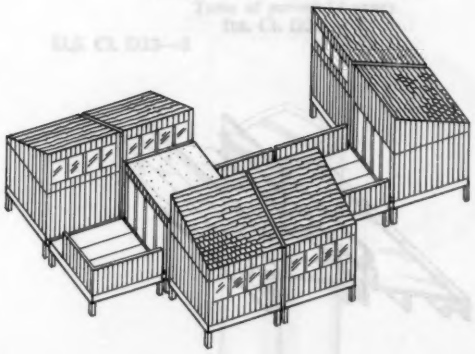


225,315
RESIDENTIAL BUILDING
Warren G. Browne, 2011 Spruce St., Philadelphia, Pa. 19103
Filed Apr. 5, 1971, Ser. No. 131,584
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

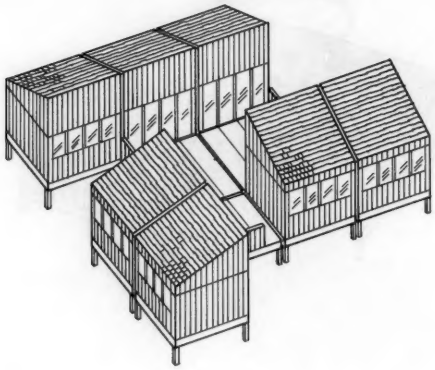


225,316
PRE-ASSEMBLED MODULAR HOUSING STRUCTURE
Edward D. Kelbish, New York, N.Y.
(280 Vanderbilt Ave., Brooklyn, N.Y. 11205)
Filed May 13, 1971, Ser. No. 143,722
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

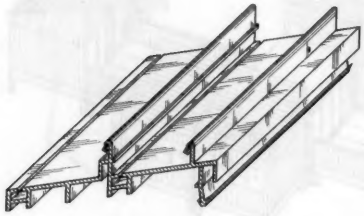
225,317
PRE-ASSEMBLED MODULAR HOUSING STRUCTURE
Edward D. Kelbish, New York, N.Y.
(280 Vanderbilt Ave., Brooklyn, N.Y. 11205)
Filed May 14, 1971, Ser. No. 143,723
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



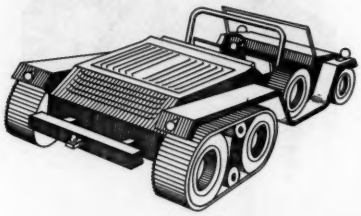
225,318
PRE-ASSEMBLED MODULAR HOUSING STRUCTURE
Edward D. Kelbish, New York, N.Y.
(280 Vanderbilt Ave., Brooklyn, N.Y. 11205)
Filed May 14, 1971, Ser. No. 143,724
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



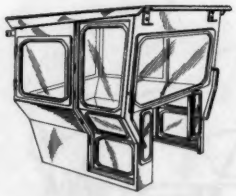
225,319
EXTRUDED PLASTIC SILL TRACK FOR A WINDOW UNIT
Dominique Dallaire and Raymond M. Dallaire, St. David, Quebec, Canada, assignors to P.H. Plastics Inc., Lauzon, Quebec, Canada
Filed Jan. 13, 1971, Ser. No. 106,299
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6



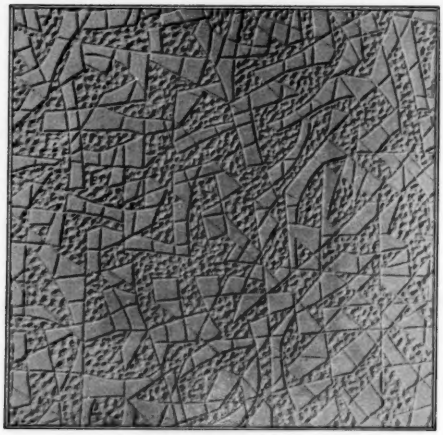
225,320
TRACK VEHICLE
John H. Nelson, 17836 Malden St., Northridge, Calif. 91324, and Raymond C. Baird, Jr., 444 25th St., Santa Monica, Calif. 90402
Filed Apr. 6, 1970, Ser. No. 22,249
Term of patent 7 years
Int. Cl. D12—*09*
U.S. Cl. D14—3



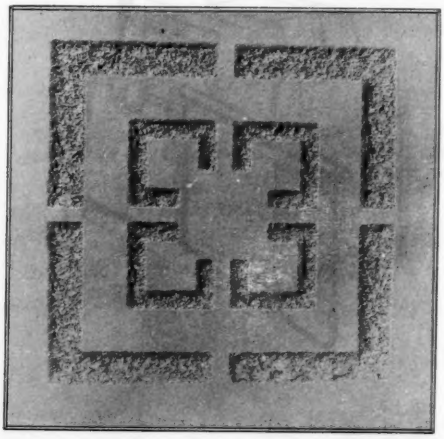
225,321
TRACTOR CAB
Phillip J. Johnson and Clifford A. Keskey, Cokato, Minn. 55321
Filed May 24, 1971, Ser. No. 146,607
Term of patent 3½ years
Int. Cl. D12—*16*
U.S. Cl. D14—27



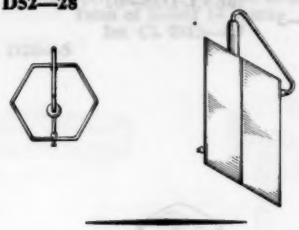
225,322
CEILING PANEL
Thomas R. Smith, 93 Hendricks Blvd., Eggertsville, N.Y. 14226
Filed Apr. 5, 1971, Ser. No. 25,703
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2



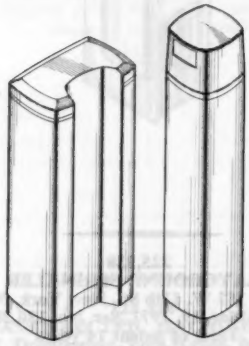
225,323
CEILING PANEL
Thomas R. Smith, 93 Hendricks Blvd., Eggertsville, N.Y. 14226
Filed Apr. 5, 1971, Ser. No. 25,754
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2



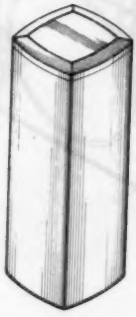
225,324
DIVING FISH LURE
Joe Bill Royal, 12207 SE. 167th, Renton, Wash. 98055
Filed Aug. 13, 1970, Ser. No. 24,466
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D52—28



225,325
COMBINED BRINE TANK AND WATER SOFTENER UNIT
William J. Marsh, Garden Grove, Calif., assignor to Robert Marsh Enterprises, Inc., Santa Ana, Calif.
Filed May 5, 1971, Ser. No. 140,638
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3

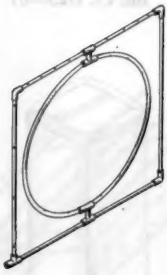


225,326
BRINE TANK CABINET
William J. Marsh, Garden Grove, Calif., assignor to Robert Marsh Enterprises, Inc., Santa Ana, Calif.
Filed May 5, 1971, Ser. No. 140,639
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3

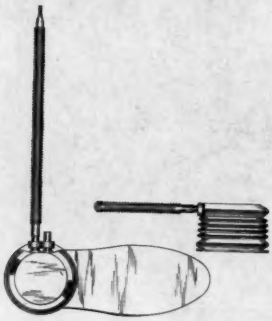


225,327
WATER SOFTENER CABINET
William J. Marsh, Garden Grove, Calif., assignor to Robert Marsh Enterprises, Inc., Santa Ana, Calif.
Filed May 5, 1971, Ser. No. 140,640
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3

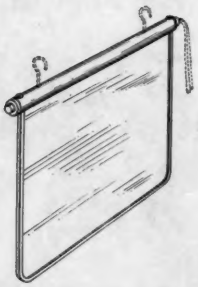
225,328
PLAYGROUND SPRINKLER
Anita Margrill, 151 W. 13th St., New York, N.Y. 10011
Filed Mar. 19, 1971, Ser. No. 126,386
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—6



225,329
INFLATING PUMP OR SIMILAR ARTICLE
Stanley Barnett, Mount Vernon, N.Y. (490 Nepperhan Ave., Yonkers, N.Y. 10701)
Filed Feb. 9, 1971, Ser. No. 114,096
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—14

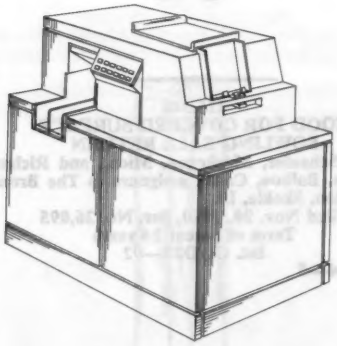


225,330
RACK FOR HEATING TEXTILE FABRICS DRAPED THEREOVER
William J. Kenney, Franklin Park, Ill., assignor to Leonard Friedman, Highland Park, Ill.
Filed Jan. 11, 1971, Ser. No. 105,783
Term of patent 7 years
Int. Cl. D23—*03*
U.S. Cl. D23—77



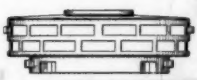
225,331
BLADE FOR A DENTAL INSTRUMENT
James Vannes Boone, Meadows Bldg., Dallas, Tex. 75206
Original design application Oct. 13, 1969, Ser. No. 19,514. Divided and this application Apr. 1, 1971, Ser. No. 130,559
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1

225,332
DOCUMENT READER-PUNCH
Wayne L. Aderman, Zumbro Falls, and Collan B. Kneale, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 3, 1971, Ser. No. 112,497
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

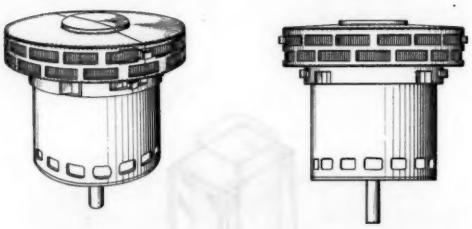


225,333
CONSOLE CABINET FOR HOUSING ELECTRICAL AND PNEUMATIC CONTROLS FOR COATING APPARATUS
John K. Adams, Worthington, Ohio, assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.
Filed Apr. 14, 1971, Ser. No. 134,116
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—5

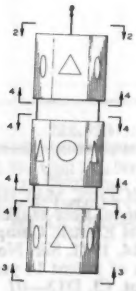
225,334
DYNAMOELECTRIC MACHINE COVER
Richard W. Dochterman, Fort Wayne, Ind., assignor to General Electric Company
Filed May 24, 1971, Ser. No. 146,588
Term of patent 14 years
Int. Cl. D13—*01*
U.S. Cl. D26—5



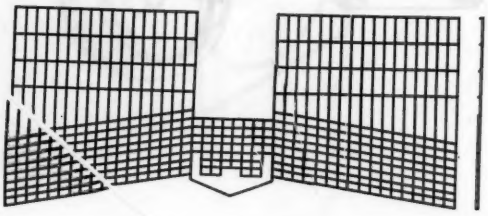
225,335
DYNAMOELECTRIC MACHINE
Richard W. Dochterman, Fort Wayne, Ind., assignor to General Electric Company
Filed May 24, 1971, Ser. No. 146,597
Term of patent 14 years
Int. Cl. D13—*01*
U.S. Cl. D26—5



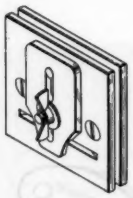
225,336
HANGING ORNAMENT
Joseph J. Hojnoski, Jr., Fulton, N.Y.
(855 Sheffield St. SW., Grand Rapids, Mich. 49501)
Filed July 1, 1971, Ser. No. 159,084
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D29—1



225,337
POULTRY CAGE DIVIDER PANEL
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Filed Feb. 25, 1971, Ser. No. 119,078
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1

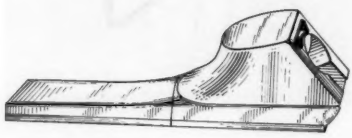


225,338
HOLDER FOR FOOD BOWL FOR PETS
Tony Robert, 5701 Southwest Freeway, Houston, Tex. 77027
Filed Dec. 11, 1970, Ser. No. 26,406
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13

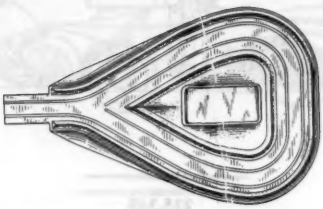


225,339
DOLL
George Duclos, New York, N.Y., assignor to UVC, Inc., New York, N.Y.
Filed Mar. 5, 1971, Ser. No. 121,608
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—4

225,340
HOOD FOR COVERED SURFACE BOWLING BALL RETURN
George E. Schaefer, Muskegon, Mich., and Richard G. Reineman, Balboa, Calif., assignors to The Brunswick Corporation, Skokie, Ill.
Filed Nov. 20, 1970, Ser. No. 26,095
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



225,341
CLUSTER BOWLING BALL RETURN ADAPTED TO RECEIVE A BOWLER IDENTIFICATION PANEL
George E. Schaefer, Muskegon, Mich., assignor to The Brunswick Corporation, Skokie, Ill.
Filed Oct. 26, 1970, Ser. No. 25,645
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5

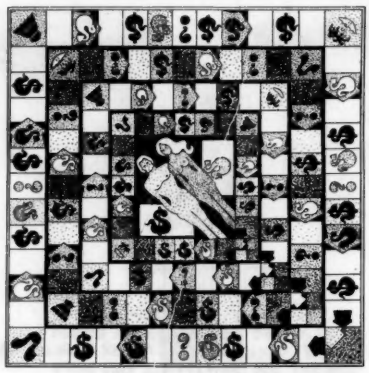


225,342
EXERCISER
Francis S. Flick, Oak Brook, Douglas A. Roberts, Elmhurst, and Edward R. Burke, Hoffman Estates, Ill., assignors to Health & Education Services Corporation
Filed Mar. 12, 1971, Ser. No. 123,917
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5

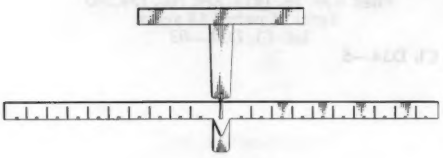
225,343
EXERCISER
Francis S. Flick, Oak Brook, Douglas A. Roberts, Elmhurst, and Edward R. Burke, Hoffman Estates, Ill., assignors to Health & Education Services Corporation
Filed Mar. 12, 1971, Ser. No. 123,918
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5

225,344
PLAYGROUND CLIMBING BARS
Steven A. Henning and Philip G. Miller, Anderson, Ind., assignors to American Playground Devices Co., Anderson, Ind.
Filed Apr. 30, 1971, Ser. No. 139,303
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5

225,345
GAME BOARD
Jack Jacob Jaffe, London, England, assignor to Catalyst Products (Leisure) Limited, London, England
Filed Mar. 3, 1971, Ser. No. 120,802
Claims priority, application Great Britain Jan. 12, 1971
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5

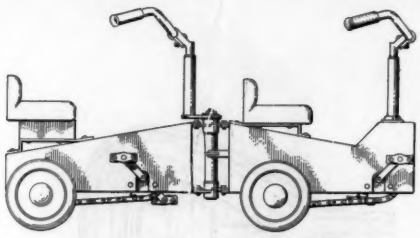


225,346
TOY BALANCE
John Michael Osmond Bodman, Ongar, England, assignor to The Educational Supply Association Limited, Stevenage, Hertfordshire, England
Filed Dec. 7, 1970, Ser. No. 26,334
Claims priority, application Great Britain Sept. 11, 1970
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

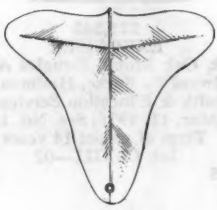


225,347
HANGER FOR SUPPORTING A BALANCED ARTICLE
Duane W. Bacon, Jr., 6743 Candlewood Trail, Birmingham, Mich. 48010
Filed Feb. 26, 1971, Ser. No. 119,448
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

225,348
ARTICULATED TANDEM WHEELED VEHICLE
Arthur R. Garrett, Rte. 1, New Wilmington, Pa. 16142
Filed Mar. 1, 1971, Ser. No. 120,005
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D34—15

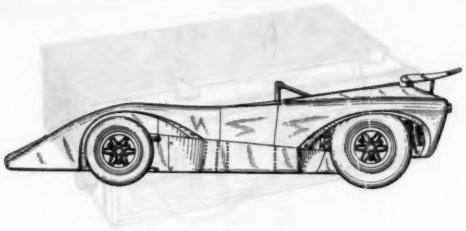


225,349
KITE
Albert W. Gould, 14 Shady Brook Road, Great Neck, N.Y. 11021
Filed May 6, 1971, Ser. No. 141,082
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

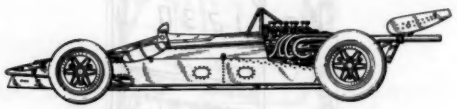


225,350
KITE
Ralph M. La Zar, 4442 Emerson, Skokie, Ill. 60076, and Walter B. Herbst, 86 Salem Lane, Evanston, Ill. 60203
Filed May 7, 1971, Ser. No. 141,455
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

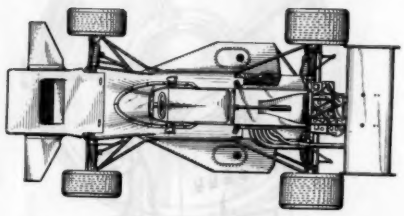
225,351
MODEL RACING CAR
Eric Harrison Broadley, Pangborne, near Reading, England, assignor to Lola Cars Limited, Huntingdon, England
Filed July 2, 1971, Ser. No. 159,157
Claims priority, application Great Britain Jan. 5, 1971
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



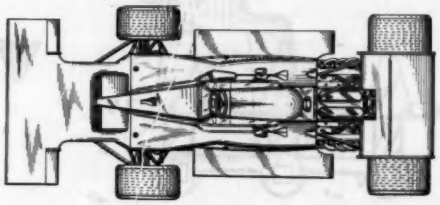
225,352
MODEL RACING CAR
Eric Harrison Broadley, Pangborne, near Reading, England, assignor to Lola Cars Limited, Huntingdon, England
Filed July 2, 1971, Ser. No. 159,158
Claims priority, application Great Britain Jan. 5, 1971
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—15



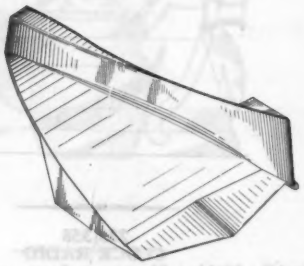
225,353
MODEL RACING CAR
Eric Harrison Broadley, Pangborne, near Reading, England, assignor to Lola Cars Limited, Huntingdon, England
Filed July 2, 1971, Ser. No. 159,159
Claims priority, application Great Britain Jan. 5, 1971
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—15

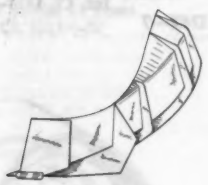


225,354
MODEL RACING CAR
Derek Gardner, West Horsley, England, assignor to Tyrrell Racing Organisation Limited, Long Reach, Ockham, England
Filed June 28, 1971, Ser. No. 157,782
Claims priority, application Great Britain Dec. 29, 1970
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

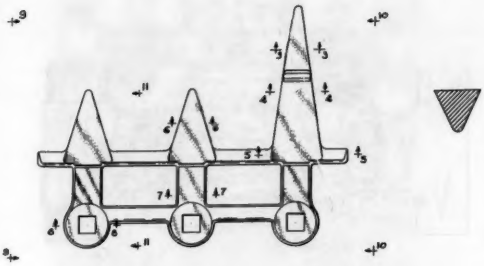


225,355
SNOWPLOW
Cedric K. Little, 200 High Road, Newbury, Mass. 01950
Filed Oct. 6, 1970, Ser. No. 25,349
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D35—2

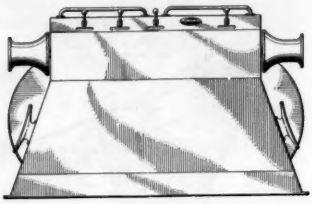




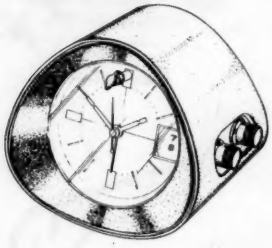
225,356
SICKLE GUARD FOR HARVESTERS
Archie E. Neal and James G. Storms, Garfield, Wash., assignors to The J. E. Love Company, Garfield, Wash.
Filed Feb. 16, 1971, Ser. No. 115,929
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1



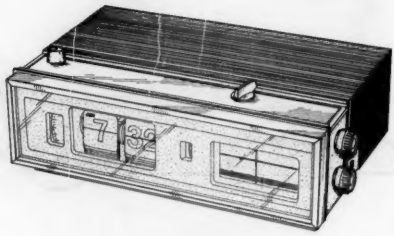
225,357
MULTIPLE WINCH
Benjamin D. Alleman, Hialeah, Fla., assignor to Neptune Winch Corp., Hialeah, Fla.
Filed Nov. 16, 1970, Ser. No. 26,029
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D41—1



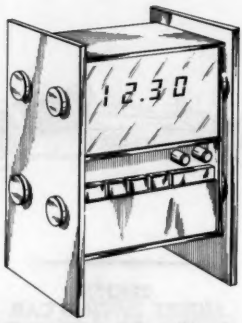
225,358
CLOCK RADIO
Katsuhiko Makino, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 5, 1971, Ser. No. 140,646
Claims priority, application Japan Nov. 6, 1970
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7



225,359
DIGITAL CLOCK RADIO
Katsuhiko Makino, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed May 19, 1971, Ser. No. 145,105
Claims priority, application Japan Nov. 20, 1970
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7

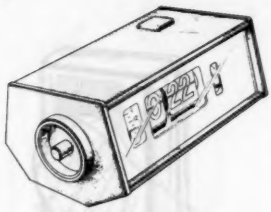


225,360
CLOCK OR SIMILAR ARTICLE
Colin M. Healy, Huntington, and Arthur M. Felske, Westport, Conn., assignors to General Electric Company
Filed June 15, 1971, Ser. No. 153,483
Term of patent 7 years
Int. Cl. D10—*01*
U.S. Cl. D42—7

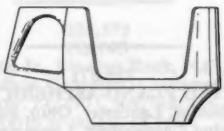


225,361
ELECTRONIC METRONOME
John M. Williams, Tulsa, Okla., assignor to La Barge, Inc., St. Louis, Mo.
Filed June 30, 1971, Ser. No. 158,666
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D42—7

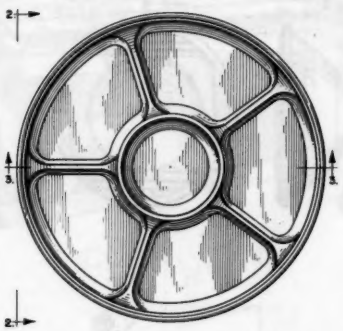
225,362
DIGITAL ALARM CLOCK
Riki Wantanabe, Tokyo, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-to, Japan
Filed July 12, 1971, Ser. No. 161,398
Claims priority, application Japan Jan. 13, 1971
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7



225,363
TUMBLER HOLDER
Arthur Anthony Welsh, 2 Granville Ave., Hartlepools, England
Filed Jan. 12, 1971, Ser. No. 105,995
Term of patent 3½ years
Int. Cl. D7—*01*
U.S. Cl. D44—10



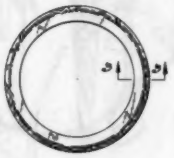
225,364
TRAY
Patricia A. Antoni, Wheeling, Ill., assignor to Ekco Products, Inc., Wheeling, Ill.
Filed Feb. 3, 1971, Ser. No. 112,504
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—10



225,365
BEVERAGE SERVER OR THE LIKE
Glenn B. Beckman, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Mar. 19, 1971, Ser. No. 126,391
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—21

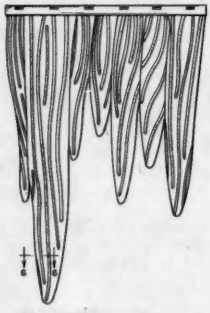
225,366
COFFEE POT
Anna Altieri, 195 Summit Drive, Cranston, R.I. 02920
Filed May 11, 1971, Ser. No. 142,432
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—26.1

225,367
RING
Warren R. Higgins, 4764 N. Oakland Ave., Milwaukee, Wis. 53211
Filed Mar. 8, 1971, Ser. No. 122,256
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10

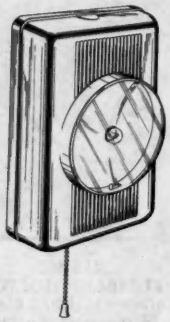


225,368
PENDANT
Clyde L. Adams, 4301 21st Ave., Moline, Ill. 61265
Filed May 18, 1971, Ser. No. 144,699
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10

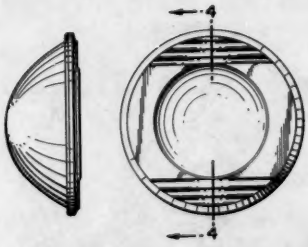
225,369
ILLUMINATED ORNAMENT
Earl A. Miller, Orem, Utah 84057
Filed Jan. 25, 1971, Ser. No. 109,722
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—20



225,370
WIRELESS LIGHTING FIXTURE
Curtiss M. Peasley, 25 Boulder Drive, Burlington, Mass. 01803
Filed May 21, 1971, Ser. No. 145,990
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—24



225,371
FLUTED PLANO-ASPHERIC LENS
Howard A. Schaefer, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Original design application Feb. 25, 1970, Ser. No. 21,604. Divided and this application Sept. 1, 1971, Ser. No. 177,200
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32

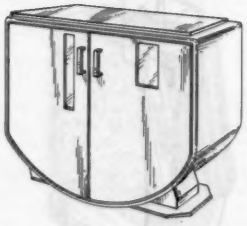


225,372
COMBINED RADIO RECEIVER, TAPE RECORDER AND TELEVISION RECEIVER
Tadashi Sumino, Takatsuki, Tadahiko Tokuda, Osaka, Kazuhiro Ueda, Takatsuki, Yasunobu Nakamura, Suita, Osamu Sugihara, Takatsuki, and Makoto Terauchi, Ibaragi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 5, 1971, Ser. No. 131,592
Claims priority, application Japan Oct. 6, 1970
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4

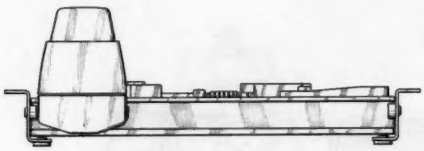
225,373
PIANO
Winsor D. White, Jr., Blowing Rock, N.C., assignor to D. H. Baldwin Company, Cincinnati, Ohio
Filed Apr. 21, 1971, Ser. No. 136,302
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—9

225,374
PIANO
Dennis Barket, Cincinnati, Ohio, and Winsor D. White, Jr., Blowing Rock, N.C., assignors to D. H. Baldwin Company, Cincinnati, Ohio
Filed Apr. 21, 1971, Ser. No. 136,307
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—9

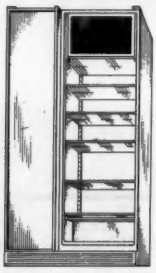
225,375
COMBINED FILM HOUSING AND PROJECTOR BASE
Angelo Boudouris, Sylvania, Ohio, and Geoffrey T. Gray, Lambertville, Mich., assignors to Eprad Incorporated, Toledo, Ohio
Filed Dec. 7, 1970, Ser. No. 26,330
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1



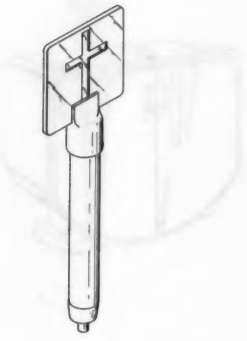
225,376
PRINTING MACHINE
Yasuaki Yamamoto, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Filed Jan. 13, 1971, Ser. No. 106,316
Claims priority, application Japan Dec. 14, 1970
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11



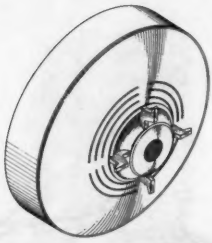
225,377
DOMESTIC REFRIGERATOR CASE
David L. Gammons, Grove City, and Carl A. Peterson, Columbus, Ohio, assignors to Westinghouse Electric Corporation
Filed Mar. 25, 1970, Ser. No. 22,059
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D67—3



225,378
ILLUMINATED WAND
Isadore B. Rachman, Philadelphia, Pa., assignor to Metal Dynamics Corporation, Philadelphia, Pa.
Filed July 9, 1970, Ser. No. 24,218
Term of patent 14 years
Int. Cl. D29—*99*
U.S. Cl. D72—1

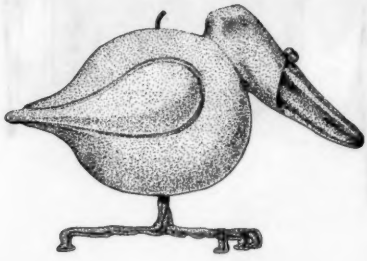


225,379
FIRE ALARM
Edward L. Gallagher, Capistrano Beach, Robert W. Limacher, Corona Del Mar, and Robert S. Inlow, San Pedro, Calif., assignors to A-T-O Inc., Willoughby, Ohio
Filed Apr. 6, 1971, Ser. No. 131,847
Term of patent 14 years
Int. Cl. D29—*01*
U.S. Cl. D72—1

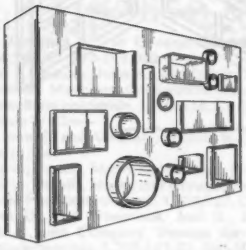


225,380
FIRE DETECTION ALARM COVER
David M. Sanger, Livingston, N.J., and Thurston H. Toeppen, Poughkeepsie, N.Y., assignors to General Signal Corporation, Rochester, N.Y.
Filed May 5, 1971, Ser. No. 140,652
Term of patent 14 years
Int. Cl. D29—*01*
U.S. Cl. D72—1

225,381
CANDLE OR THE LIKE
Donovan G. Rankin, Mountain View, Calif. (P.O. Box 889, Sunnyvale, Calif. 94088), and Allen J. Smith, 473 Walnut Drive, Milpitas, Calif. 95035
Filed Mar. 25, 1971, Ser. No. 128,212
Term of patent 7 years
Int. Cl. D26—*04*
U.S. Cl. D73—1

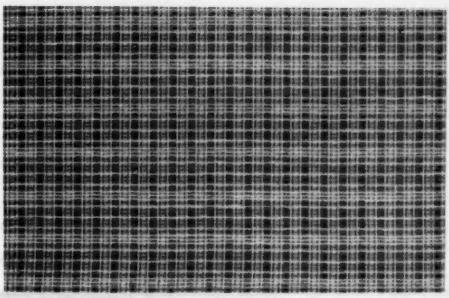


225,382
DISPLAY RACK
Thomas R. Viviano and John C. Troy, Tampa, and Ronn Ginn, Treasure Island, Fla., assignors to Tampa Stereo Center, Inc., Tampa, Fla.
Filed Aug. 27, 1970, Ser. No. 24,721
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D80—9

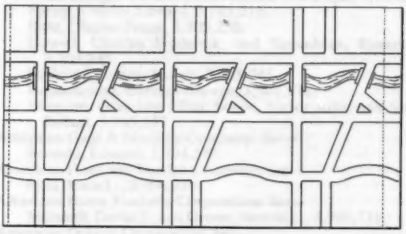


225,383
CASE FOR A HOLIDAY DETECTOR OR SIMILAR ARTICLE
Charles W. Eisele, Warminister, Pa., assignor to H. C. Price Co., Bartlesville, Okla.
Filed Feb. 25, 1971, Ser. No. 119,067
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1

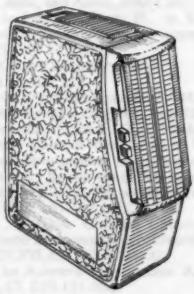
225,384
FABRIC FOR USE IN CURTAINS
Peter Schroeder, Arni-Islisberg, Switzerland, assignor to Gardisette International AG, Zurich, Switzerland
Filed Mar. 30, 1971, Ser. No. 129,651
Claims priority, application Germany Oct. 6, 1970
Term of patent 3½ years
Int. Cl. D5—*05*
U.S. Cl. D92—1



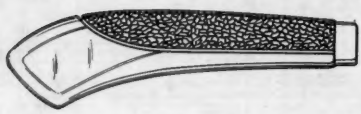
225,385
SHEET
Dennis W. Dougherty, 4376 Locksley Road, Tucker, Ga. 30084
Filed Feb. 26, 1971, Ser. No. 119,449
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D92—26



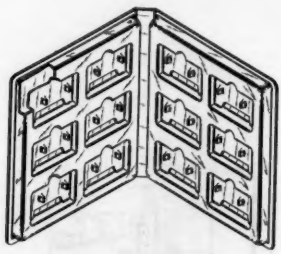
225,386
ELECTRIC DRY SHAVER
Hermann R. Schaefer, Bridgeport, Conn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Nov. 16, 1970, Ser. No. 25,996
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3



225,387
CUTLERY HANDLE
Albert W. Krock, Fremont, Ohio, assignor to The Scott & Fetzer Company
Filed Sept. 20, 1971, Ser. No. 182,297
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D95—3



225,388
TAPE CASSETTE STORAGE ALBUM
Gerald L. Price, 16610 Calneva Drive, Encino, Calif. 91316
Filed Apr. 17, 1970, Ser. No. 22,480
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1



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TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF DECEMBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A/S Raufoss Ammunisjonsfabrikker: *See—*
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Aachtel, Gary D.: *See—*
Brayton, Robert K.; Gustavson, Fred G.; and Aachtel, Gary D., 3,705,409.

Aagard, Roger L.; and Schmit, Francis M., to Honeywell Inc. Magneto-optic readout system. 3,705,395, Cl. 340-174.0yc.

Abbott, John A.; and Watson, Clyde Donald, to FMC Corporation. Method for continuous preparation of tobacco. 3,704,716, Cl. 131-140.00p.

Abell, Roy F., Jr., to Eaton Corporation. Hydraulic valve lifter. 3,704,696, Cl. 123-90.330.

Abercrombie, Jonathan C., to General Electric Company. Latch device. 3,704,906, Cl. 292-247.000.

Abolafia, Oscar R.; Butora, John A.; and Orinik, Michael T., to International Business Machines Corporation. Process for forming a microporous cellular polyimide. 3,705,118, Cl. 260-2.50n.

Abraham, William W.: *See—*
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Abruzzi, Pierluigi: *See—*
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Vargiu, Silvio; Pitzalis, Mario; and Abruzzi, Pierluigi, 3,705,117.

Adahan, Carmeli. Fluid control valve. 3,704,727, Cl. 137-625.650.

Adams, Charles D.; and Wommack, Joel B., Jr., to Du Pont de Nemours, E. I., and Company. Process for preparing alkyl 2-benzimidazolecarbamates. 3,705,173, Cl. 260-309.200.

Adams, Phillip; and Petrocci, Alfonso N., to Millmaster Onyx Corporation. Microbiocidal naphthenyl imidazolines. 3,705,027, Cl. 71-67.000.

Adams, William E.: *See—*
McReynolds, James C.; and Adams, William E., 3,705,026.

Addor, Roger Williams; and Ailman, avid Edgar, to American Cyanamid Company. Bisphosphorylated imidodithiocarbonates and methods for their preparation. 3,705,211, Cl. 260-926.000.

Addressograph-Multigraph Corporation: *See—*
Johnson, Robert M.; Toby, Dennis E.; and Koch, Robert M. (said Toby and said Koch assors. to), 3,704,661.
Johnson, Robert M.; and Toby, Dennis E., 3,704,662.

Aelony, David; and McKillip, William James, to Ashland Oil, Inc. Synthesis of 4H-3,1-benzoxazine-2(1H)-one. 3,705,154, Cl. 260-244.00r.

Aerovox Corporation: *See—*
Kalstein, Abraham G., 3,705,336.

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Agfa-Gevaert Aktiengesellschaft: *See—*
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Agricultural Biologicals Corporation: *See—*
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Aidlin, Samuel S.; and Aidlin, Stephen H. Separator-conveyor. 3,704,780, Cl. 209-73.000.

Aidlin, Stephen H.: *See—*
Aidlin, Samuel S.; and Aidlin, Stephen H., 3,704,780.

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Meyer, Ernst; Grimm, Wolfgang Erlenbach; Gerlach, Klaus; and Linhart, Helmut, 3,704,863.

Aldrich, William E., to Warmaco Inc. Method of simultaneously boarding and setting knitted hosiery. 3,705,066, Cl. 156-148.000.

Alimova, Mariana Sergeevna: *See—*
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Allen & Hanburys Limited: *See—*
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Allen, Irving, to Sargent & Company. Compound action tool. 3,704,620, Cl. 72-409.000.

Allied Chemical Corporation: *See—*
Lamb, George E. R.; Prevorsek, Dusan C.; Kotliar, Abraham M.; and Oswald, Hendrikus J., 3,705,074.
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Aluminum Company of America: *See—*
Pearson, Alan; and Marhanka, John E., 3,705,223.

Alvarez, Bernard V. Poison bait station for small bugs or the like. 3,704,539, Cl. 43-131.000.

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Kaercher, Ralph William; and Peschke, John Ralph, 3,704,804.

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Addor, Roger Williams; and Ailman, avid Edgar, 3,705,211.
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American Optical Corporation: *See—*
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AMF Incorporated: *See—*
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Blatt, William F.; Agranat, Edward A.; and Rigopulos, Peter N., 3,705,100.

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AMP Incorporated: *See—*
Bogar, Jerry Hench, 3,705,379.

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Kinkaid, Robert John; and Asick, John Carl, 3,705,376.

Anacker, Wilhelm; and Zappe, Hans H., to International Business Machines Corporation. Superconducting memory array using weak links. 3,705,393, Cl. 340-173.100.

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Wade, Robert M., 3,705,257.

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Andoniev Sergei Mikhailovich; Zhigulev, Petr Georgievich; Kudinov, Gennady Alexandrovich; Filipiev, Oleg Vladimirovich; and Energoresursov Predpriaty Chernoi Metallurgii, to Vsesojuzny Nauchno-issledovatelsky i proektny Institut po Ochistke Tekhnologicheskkh Gazov i Stochnykh vod i Ispolzovaniju Vtorichnykh Energoresursov Predpriaty Chernoi Metallurgii. Evaporative cooling of metallurgical furnaces. 3,704,747, Cl. 165-101.000.

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Aono, Shigeo, to Nissan Motor Company, Limited. Start-up fuel injection system. 3,704,702, Cl. 123-179.00g.
Appelt, Daren Ray, to Texas Instruments, Incorporated. MOS dynamic memory. 3,705,392, Cl. 340-173.00r.
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Glaesener, Ernest, 3,704,861.
Arens, Egidius; Muller-Lindemann, Dieter; and Triebold, Karl-Friedrich, to Krupp, Fried, Gesellschaft mit beschrankter Haftung. Apparatus for determining transposed components of a vector. 3,705,334, Cl. 317-231.000.
Arenson, Gary N. Anti-flinch training apparatus. 3,704,530, Cl. 35-25.000.
Aristarkhov, Nikolai Alexandrovich: *See*—
Kuznetsov, Lev Vasilievich; Slavinsky, Zunya Mikhalevich; Kalachev, Vasily Alexeevich; Krupin, Alexandr Leonidovich; Aristarkhov, Nikolai Alexandrovich; Popkov, Eduard Jurievich; Trutnev, Vladimir Alexandrovich; and Bulychev, Nikolai Petrovich, 3,704,496.
Arkhangelsky, Lev Arkadievich; and Semenova, Ljubov Mikhailovna, to Bjuro Vzaimozamenyaemosti V. Metalloobrabatyva juschei Promyschlennosti. Instrument for checking line of contact of spur gears for straightness and nominal direction. 3,704,521, Cl. 33-17950r.
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Linnebuhr, Eckhard, 3,704,777.
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Arndt, Heinz-Herbert; and Nosch, Edwin, to Licentia Patent-Verwaltungs-G.m.b.H. Device for the epitaxialy deposition of semiconductor material. 3,704,987, Cl. 118-48.000.
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Johnson, George R., 3,705,062.
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Ashcraft, Bruce E.; and Ashcraft, Clarence S., Jr., 3,705,326.
Ashcraft, Clarence S., Jr.: *See*—
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Ashcraft, Thomas L., Jr., to Esso Research and Engineering Company. Refined heavy alkylate bottoms oil. 3,705,093, Cl. 208-14.000.
Ashiya, Ryosuke: *See*—
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Baird, Eugene M.; and Ullman, John G., to Du Pont de Nemours, E. I., and Company. Spinneret assembly. 3,704,971, Cl. 425-131.000.
Baker Perkins Limited: *See*—
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Battelle Memorial Institute: *See*—
Genequand, Pierre, 3,705,144.
Batz, James E., to Northern Illinois Gas Company. Remote meter reading system. 3,705,385, Cl. 340-152.00r.
Bauer, Victor John: *See*—
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Beaudoox, Pierre Emile. Sugar cane sampler. 3,704,627, Cl. 73-423.00r.
Beaver, Bud K.; and Zakarian, A. David. Spark plug cleaning devices. 3,704,552, Cl. 51-9.000.
Beck, Christian A.: *See*—
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Beck, Earl J., Jr., to United States of America, Navy. Method and apparatus for rock excavation. 3,704,966, Cl. 417-490.000.
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Benoit, Roland A., to Interroyal Corporation. Mounting device for electrical switch. 3,705,282, Cl. 200-168.00r.

Berg, Lawrance F., to Caterpillar Tractor Company. Hydraulic jack stroke cushioning means. 3,704,650, Cl. 91-395.000.

Bergeron, Grafton; and Leddy, James J., to Dow Chemical Company, The. Electrolytic cell and method for producing chlorine and metal hydroxides. 3,705,090, Cl. 204-266.000.

Bergmans Motorindustri AB: *See—*
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Berkman, Stephen A. Mechanical transfer teaching system with universal mountings. 3,704,527, Cl. 35-13.000.

Bernardi, Luigi; Bosisio, Germano; De Castiglione, Roberto; and Goffredo, Onofrio, to Societa' Farmaceutici Italia. Peptides related to the C-terminal sequence of CCK-PZ and caerulein. 3,705,140, Cl. 260-112.500.

Bernier, Robert N.; Blackmer, Dwight; and Paulsen, Paul L., to Wanskuck Company. Metal reel. 3,704,838, Cl. 242-115.000.

Berry, Currie B., Jr.; and Fanning, Robert J., to Ethyl Corporation. Foamed metal. 3,705,030, Cl. 75-20.00f.

Bertram, James L.; and Bowen, David O., to Dow Chemical Company, The. Glycidyl ethers of glycerine-containing polyhydroxyl compounds. 3,705,115, Cl. 260-2.0ep.

Bettcher Industries, Inc.: *See—*
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Bettcher, Louis A., to Bettcher Industries, Inc. Food press and dies. 3,704,665, Cl. 100-232.000.

Betz, Bernard K, to Honeywell Inc. Conversion system. 3,705,295, Cl. 235-92.0pl.

Betz Laboratories, Inc.: *See—*
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Bezark, Richard S. Multi-component molded plastic chair. 3,704,912, Cl. 297-445.000.

Biberacher, Gerhard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Selective removal of nitrogen dioxide from gases. 3,705,231, Cl. 23-2.00r.

Bielby, William B. Beehives. 3,704,471, Cl. 6-2.000.

Binard, Pierre C., to Elphiac. Inductor for the thermal treatment of a material which is not very or non-electrically conducting containing ferromagnetic or electrically conductive particles. 3,705,284, Cl. 219-10.490.

Bio-Medical Sciences, Inc.: *See—*
Pickett, Charles G.; and Chadha, Desh D., 3,704,985.

Bird, Douglas, to Environment/One Corporation. Fluid medium source trace method. 3,704,952, Cl. 356-87.000.

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Blacklock, Colin Francis, to TRW Inc. Fastener. 3,704,486, Cl. 24-73.00p.

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Blanchet, Raymond J.; and Stanton, William G., to United States Steel Corporation. Method and apparatus for making twisted stone sawing strands and the like. 3,704,580, Cl. 57-34.0at.

Blatt, William F.; Agranat, Edward A.; and Rigopulos, Peter N., to Amicon Corporation. Blood fractionating process and apparatus for carrying out same. 3,705,100, Cl. 210-23.000.

Bleher, Johannes Hartmut; Chang, Chi Shih; and Dockerty, Robert Charles, to International Business Machines Corporation. Silicon gate FET-niobium oxide diode-memory cel. 3,705,419, Cl. 317-235.00r.

Blubaugh, Robert L.; Ruckle, Robert A.; and Watts, Hubert J., to Continental Oil Company. Method and apparatus for optical alignment of industrial equipment. 3,704,522, Cl. 33-286.000.

Blum, Paul; Lefrancois, Jacques; and Vinarnick, Louis, to Commissariat a l'Energie Atomique and Societe Lyonnaise de Plomberie Industrielle. Neutron-absorbing material and method of manufacture. 3,705,101, Cl. 252-478.000.

Bochis, Richard J.: *See—*
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Bock, Helmuth-Joachim; and Sennefelder, Anton, to Siemens Aktiengesellschaft. Circuit arrangement for telecommunication installations, especially, telephone exchange installations with parallel alternatively acting identification signal transmitters. 3,75,274, Cl. 179-175.20r.

Bockstahler, Theodore E.; and Hunt, Curtis R., to Rohm and Haas Company. Prevention of polymer fouling of monomer processing apparatus. 3,705,190, Cl. 260-486.00r.

Boeing Company, The: *See—*
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Boer, Karl W. Light beam deflection method and apparatus. 3,704,935, Cl. 350-150.00r.

Bogar, Jerry Hench, to AMP Incorporated. Connector for interconnection of symmetrical and asymmetrical transmission lines. 3,705,379, Cl. 339-177.00r.

Bohner, Beat; and Rufenacht, Kurt, to Geigy Chemical Corporation. Phosphoric acid esters, intermediates for making the same, and pest control by means of said esters. 3,705,240, Cl. 424-203.000.

Bohni, Erika; Ruegg, Rudolf; and Ryser, Gottlieb, to Hoffmann-La Roche, Inc. Compositions and methods for treating amoebic and bacterial intestinal infections. 3,705,249, Cl. 424-274.000.

Bombardier Limited: *See—*
Perreault, Jules, 3,704,918.

Bonnis, Peter. Leaf sweeper and loader. 3,704,477, Cl. 15-79.000.

Bono, David; and Prud'Hon, Lucien, to Association des Ouvriers en Instruments de Precision. Apparatus for determination of alcohol titer in alcoholic liquids. 3,705,015, Cl. 23-253.00r.

Boot, Herbert W.; and Parr, Leslie R., to USM Corporation. Automatic bottom roughing machine. 3,704,604, Cl. 69-6.500.

Bor, Maria, nee Szabo: *See—*
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Borner, Manfred; Maslowski, Stefan; and Krumpholz, Oskar, to Licentia Patent-Verwaltungsgesellschaft m.b.H. Optical coupling arrangement. 3,704,996, Cl. 350-96.0wg.

Bosch, Robert Elektronik Und Photokino GmbH: *See—*
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Boyd, George C.: *See—*
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Boyhont, Donald S.; and Souders, Marvyn L., to Fuller Company. Pulverulent material conveying apparatus. 3,704,917, Cl. 302-50.000.

Boyles Industries Limited, mesne: *See—*
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Wolda, Tiete O., 3,704,756.

BP Chemicals Limited: *See—*
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Bradley, Lawrence D.: *See—*
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Brandberg, Lawrence C.: *See—*
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Brandl, Willi. Fuel-fired boiler for production of domestic hot water and for heating. 3,704,691, Cl. 122-33.000.

Brannon, Joseph W. Cleaning device. 3,704,482, Cl. 15-348.000.

Brault, Andre R.; Chitayat, Anwar K.; and Beeh, Ronald C. M., said Beech assor. to OPTOmechanisms, Inc. Microcircuit art generating means. 3,704,946, Cl. 355-46.000.

Brayton, Robert K.; Gustavson, Fred G.; and Aachtel, Gary D., to International Business Machines Corporation. Tableau network design system. 3,705,409, Cl. 444-1.000.

Bresler, Semen Efimovich; Kazbekov, Embek Nikolaevich; and Fomichev, Viktor Nikolaevich. Method of investigation of electronic paramagnetic resonance. 3,705,345, Cl. 324-.50r.

Breuer, Herman, to Squibb, E. R., & Sons, Inc. Method of controlling nematodes. 3,705,247, Cl. 424-272.000.

Breuer, Max E.: *See—*
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British Petroleum Company Limited, The: *See—*
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Brody, Thomas P., to Westinguse Electric Corporation. Thin film optoelectronic semiconductor device using light coupling. 3,705,309, Cl. 250-217.00s.

Broecker, Bernhard, to Reichhold-Albert-Chemie Aktiengesellschaft. Vinyl etherified epoxy resins copolymerized with carboxy and vinyl containing monomers. 3,705,206, Cl. 260-837.000.

Brogl, Horst: *See—*
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Brookhyser, Byron B., to Weyerhaeuser Company. Sheet positioner. 3,704,882, Cl. 271-68.000.

Brooks, Wilbur G. Golf club cleaner. 3,704,475, Cl. 15-21.00e.

Brown, Boveri & Company Limited: *See—*
Wild, Peter, 3,705,310.

Brown, Burton D. Attachment for measuring coordinates in a milling machine. 3,704,684, Cl. 116-115.500.

Brown, Donald S.: *See—*
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Brown, Keith S., to Memorex Corporation. Magnetic tape cartridge. 3,704,841, Cl. 242-199.000.

Browning, Iben, to Longshots, Inc. Method and apparatus for transmitting information. 3,704,948, Cl. 355-80.000.

Bruns, Paul-Heinz, to Steinkohlen-Elektrizitat Aktiengesellschaft. Starting system for a gas-turbine installation. 3,704,586, Cl. 60-39.18b.

Brunswick Corporation: *See—*
Stout, Thomas C.; and Kaiser, Andrew J., 3,705,022.
Sundberg, Bertil J.; and Luksch, Andreas, 3,705,021.

Buchan, William R., to Itek Corporation. See-through readout of electro-optic medium. 3,704,933, Cl. 350-150.000.

Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, to Farbenfabriken Bayer Aktiengesellschaft. N-trityl-imidazoles. 3,705,172, Cl. 260-309.000.

Buchmann, Paul; and Beringer, Monique, to Tamag Basel AG. Apparatus for the production of a sheet of tobacco. 3,704,715, Cl. 131-140.00c.

Budd Company, The: *See—*
Einhorn, Stanley C., 3,704,602.

Buelow, William H., to Rex Chainbelt Inc. Auxiliary steerable wheels for vehicles. 3,704,896, Cl. 280-81.00a.

Buglewicz, Neal J. Telephone answering device. 3,705,265, Cl. 179-6.00r.

Bull Dog Lock Company: *See—*
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Bulychev, Nikolai Petrovich: *See—*
Kuznetsov, Lev Vasilievich; Slavinsky, Zunya Mikhalevich; Kalachev, Vasily Alexeevich; Krupin, Alexandr Leonidovich; Aristarkhov, Nikolai Alexandrovich; Popkov, Eduard Jurievich; Trutnev, Vladimir Alexandrovich; and Bulychev, Nikolai Petrovich, 3,704,496.

Bunger, Fred Lee; and Moore, Earl Phillip, Jr., to Du Pont de Nemours, E. I., and Company. Novel crosslinked chromium complexes. 3,705,183, Cl. 260-438.50c.

Bunker-Ramo Corporation, The: *See—*
Elkins, Luejene, 3,705,378.
Parks, Howard L., 3,705,332.

Bunting, William; and Langer, Arthur W., Jr., to Esso Research and Engineering Company. Process for telomerizing conjugated diolefins with aromatics and olefins. 3,705,200, Cl. 260-668.000.

Bunting, William W., Jr.; Buskirk, Robert E.; Hogan, John P.; and Mahla, Elbert M., to Du Pont de Nemours, E. I., and Company. Thermoplastic film slitting. 3,704,975, Cl. 425-304.000.

Buress, John W., II, to Drill Carrier Corporation. Automatic braking mechanism. 3,704,757, Cl. 180-6.480.

Burfoot, Walter S. Thread milling attachment for engine lathes. 3,704,648, Cl. 90-11.620.

Burgess, Wilfrid M. Slide zipper operating tool. 3,704,491, Cl. 24-205.15h.

Burney, Ivan T., to Westinghouse Electric Corporation. Washer mechanism for electrostatic precipitator. 3,704,571, Cl. 55-118.000.

Burroughs Corporation: *See—*
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Grabl, Sebastian E., 3,705,337.
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Nicol, Edward A.; and Frederick, Harold M., 3,704,793.
Tuller, Elry D., 3,705,347.
Wallace, Harry L., 3,704,666.

Burrous, Clifford N.; and Deboo, Gordon J., to United States of America, National Aeronautics and Space Administration. Temperature compensated light source using a light emitting diode. 3,705,316, Cl. 307-311.000.

Busch, Norbert: *See—*
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Busch, Thomas W., to Appleton Papers, Inc., mesne. Method for the manufacture of double coated sheets with pressure-rupturable materials. 3,705,049, Cl. 117-36.900.

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Buss AG: *See—*
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Butler, Gerald D.: *See—*
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Butora, John A.: *See—*
Abolafia, Oscar R.; Butora, John A.; and Orinik, Michael T., 3,705,118.

Bynagte, Peter W., to Westgate-California Foods, Inc. Process of extracting meat from crustaceans particularly shrimp. 3,705,040, Cl. 599-111.000.

Cachat, John F., to Growth International, Inc. Mobile apparatus for the induction heating of metal ingots. 3,705,285, Cl. 219-10.570.

California Metal Enameling Company: *See—*
Penton, Hugh V.; and Dunphy, Gerald P., 3,704,535.

Cameron, Frank L., to Westinghouse Electric Corporation. Current limiting fuse. 3,705,373, Cl. 337-160.000.

Campbell, David Neil; and Turton, Frank Arnold, to Hymatic Engineering Company, The. Cryogenic cooling apparatus. 3,704,598, Cl. 62-514.000.

Campbell, David Neil; and Turton, Frank Arnold, to Hymatic Engineering Company Limited, The. Cryogenic cooling apparatus. 3,704,601, Cl. 62-514.000.

Campbell, Hollis O.; Fetrow, John W.; and Mitchell, Kim L., to Continental Oil Company. Variable depth, remotely selective seismic cable depth controller. 3,704,681, Cl. 114-235.00b.

Campbell, Raymond E.: *See—*
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Canadian Patents and Development Limited: *See—*
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Canon Kabushiki Kaisha: *See—*
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Kinjo, Kikuo; Yamanouchi, Teruo; Kondo, Eiichi; Matsuno, Hiroshi; and Nishide, Katsuhiko, 3,705,031.
Ogiso, Mitsutoshi; and Yamada, Katsuhiko, 3,704,656.
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Canon Kabushiki Kaisha Co., Ltd.: *See—*
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Carborundum Company, The: *See—*
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Carpenter, Warren E.: *See—*
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Carpenture, Herbert L., Jr.; and Green, Oscar, to Greif Bros. Corporation. Truck cargo transfer assembly. 3,704,798, Cl. 214-38.00d.

Carter, Dale K.; and Ronkes, Carel H., to Beckman Instruments, Inc. Automatic radiant energy analyzer with programmed sample selection and analysis. 3,704,953, Cl. 356-96.000.

Carter, William C.; Jessep, Donald C., Jr.; and Wadia, Aspi B., to International Business Machines Corporation. Morphic exclusive- or circuits. 3,705,357, Cl. 328-93.000.

Cary Instruments: *See—*
Chupp, Vernon L., 3,704,951.
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Caterpillar Tractor Company: *See—*
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Loyd, Calvin D.; Oberle, Theodore L.; and Satzler, Ronald L., 3,704,821.

Catino, Sigmund C.; and Strobel, Albert F., to GAF Corporation. Skin-protective sun-screening composition and method. 3,705,234, Cl. 424-60.000.

Cawley, John Duval; and Faber, Jan Willem Hendrik, to Eastman Kodak Company. Polymeric acrylic compounds of polycyclic hydrocarbons and processes for preparing same. 3,705,136, Cl. 260-79.700.

Celotex Corporation, The: *See—*
Wiegleb, Edward A., 3,704,548.

Centre National d'Etudes Spaliales: *See—*
Randoing, Jean-Martial, 3,705,353.

Cervi, Frank R.; and Tonkyn, Richard G., to Betz Laboratories, Inc. Aminoalkylene phosphonate derivatives as corrosion inhibitors in aqueous systems. 3,705,005, Cl. 21-2.700.

Chadha, Desh D.: *See—*
Pickett, Charles G.; and Chadha, Desh D., 3,704,985.

Chai, Hi D.; Mills, Stephen H.; Pawletko, Joseph P.; Peters, Francis E.; and Young, Carl T., to International Business Machines Corporation. Magnetically actuated and restored print hammer. 3,705,370, Cl. 335-229.000.

Chang, Chi Shih: *See—*
Bleher, Johannes Hartmut; Chang, Chi Shih; and Dockerty, Robert Charles, 3,705,419.

Chapan, Clarence C.: *See—*
Becker, Richard B.; and Chapan, Clarence C., 3,704,763.

Chemie Grunenthal G.m.b.H.: *See—*
Edwards, John A.; Fried, John H.; and Mills, John S., 3,705,182.

Chemische Werke Witten GmbH: *See—*
Naskar, Sasanka Sekhar; Hulsmann, Hans-Leo; and Renckhoff, Gustav, 3,705,186.

Chevron Research Company: *See—*
Sharman, Samuel H., 3,705,113.
Singer, Malcolm Scott, 3,705,188.
Sweeney, William A.; and Woo, Gar Lok, 3,705,114.

Chiarelli, Ronald L. Puck for ice hockey. 3,704,891, Cl. 273-128.00r.

Chisholm, John P. Aircraft clock monitoring and time propagating. 3,705,404, Cl. 343-112.00r.

Chitayat, Anwar K.: *See—*
Brault, Andre R.; Chitayat, Anwar K.; and Beeh, Ronald C. M., 3,704,946.

Chiulli, Angelo J.; and Wegman, Edwin H., to Agricultural Biologicals Corporation. Process for producing collagenase. 3,705,083, Cl. 195-62.000.

Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; and Schwieter, Ulrich, to Hoffmann-La Roche, Inc. Phenyl derivatives. 3,705,187, Cl. 260-476.00r.

Chodnekar, Madjukar Subraya; Thommen, Hans; and Schwieter, Ulrich, to Hoffman-La Roche, Inc. Substituted propiolophenone compounds. 3,705,177, Cl. 260-340.300.

Chomerics, Inc.: *See—*
Seeter, Richard E., Jr.; and Hodgson, George T., Jr., 3,705,276.

Christensen, Gary Lee; and Gittelman, Donald Henry, to Western Electric Company, Incorporated. Method of descumming photoresist patterns. 3,705,055, Cl. 117-212.000.

Christensen, Poul N.: *See—*
Lazarus, Stanley D.; and Christensen, Poul N., 3,705,133.

Christoff, Chris A., to Stevens Corporation. Vibrating roller with means for circulating a cooling fluid for use in bearing and drive gear lubrication. 3,704,669, Cl. 101-349.000.

Chrysler Corporation: *See—*
Sarto, Jorma O.; and Dawson, Gary D., 3,704,698.

Chupp, Vernon L., to Cary Instruments. Multipass light cell for increasing the intensity level of Ramon light emission from a sample. 3,704,951, Cl. 356-75.000.

Ciba-Geigy AG: *See—*
Janiak, Stefan; and Rohr, Otto, 3,705,028.

Ciba-Geigy Corporation: *See—*
Heusler, Karl; and Woodward, Robert Burns, 3,705,160.
Marand, Jean, 3,704,725.
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Petree, Harris E., 3,705,156.
Weis, Claus Dieter; and Gatzi, Karl, 3,705,195.

Cik-Chemische Industrie Kempen GmbH: *See—*
Lochner, Herbert, 3,705,064.

Cioppa, Forrest J. Training and instruction device for performing cricothyroidotomy. 3,704,529, Cl. 35-17.000.

Claridge, George Henry. Water flow silencing means. 3,704,857, Cl. 251-118.000.

Clark, Chester G.: *See—*
Neumann, John W.; Clark, Chester G.; and Minbiole, Louis J., Jr., 3,704,685.

Clark, James A., to Bausch & Lomb Incorporated. Apparatus for micropositioning an operational member and a workpiece platform. 3,704,846, Cl. 248-125.000.

Clark, James M., to International Telephone and Telegraph Corporation. Frame synchronization system. 3,705,315, Cl. 307-269.000.

Clark, Michael W., to Dow Chemical Company, The. Purification of benzoic acid. 3,705,193, Cl. 260-525.000.

Clark, William, to B. F. Products Pty., Ltd. Fire Hose nozzle. 3,704,831, Cl. 239-394.000.

Clarke, Henry Courtenay Neville. Photodecomposition method and apparatus. 3,705,011, Cl. 23-230.00b.

Clearman, Jack F.: *See—*
Darby, James G.; and Clearman, Jack F., 3,704,599.

Cleek, Alvin L., to Allis-Chalmers Manufacturing Company. Plateless planter. 3,704,809, Cl. 221-220.000.

Clem, Eldred L., II. Bicycle side car. 3,704,899, Cl. 280-203.000.

Cloup, Jean. Punching machine-tools. 3,704,644, Cl. 83-639.000.

Coats, Robert Reid; and Greenway, John Michael, to Imperial Chemical Industries Limited. Heat treatment of yarns. 3,704,493, Cl. 28-1.200.

Coburn Manufacturing Co.: *See—*
Sarofeen, George M. J., 3,704,558.

Cochran, Gary D.: *See—*
Thomas, Carlton E.; and Cochran, Gary D., 3,704,949.

Cohen, Bernard, to FMC Corporation. Stain-removing solid cleansers. 3,705,103, Cl. 252-100.000.

Cole, Edward L.: *See—*
Franz, William F.; Hess, Howard V.; and Cole, Edward L., 3,705,077.

Cole, Theodore H. Article former. 3,704,622, Cl. 72-477.000.

Coleco Industries, Inc.: *See—*
Huffman, Donald; and Majewski, Richard M., 3,704,889.

Coleman, Clarence B., to Fabricated Metals, Inc. Cam and door assembly. 3,704,722, Cl. 137-242.000.

Collins, Catherine A., to Lee, Raymond, Organization, Inc. Bathroom (household) accessary. 3,704,776, Cl. 206-1.00r.

Collins, Edward, IV: *See—*
Bauman, Weldon W.; and Collins, Edward, IV, 3,705,358.

Combes, Robert P., to Societe Pour Le Developpement de la Recherche Appliquee. Device for controlling displacement of an element. 3,704,855, Cl. 251-63.400.

Comet Industries, Inc.: *See—*
Kostur, Robert E., 3,704,974.

Commissariat a l'Energie Atomique: *See—*
Blum, Paul; Lefrancois, Jacques; and Vinarnick, Louis, 3,705,101.

Compagnie Industrielle de Travaux: *See—*
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Compo Industries, Inc.: *See—*
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Computervision Corporation: *See—*
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Fryklund, Gilbert; and Denis, Richard E., 3,704,655.
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Condo, Albert C.: *See—*
Kremer, Charles J.; Condo, Albert C.; and Brown, Donald S., 3,705,121.

Connelly, Frank: *See—*
Noel, Eugene M.; and Connelly, Frank, 3,704,735.

Conner, Charles J., to United States of America, Agriculture. Pad both formulation of iron salt, potassium permonganate, ammonium oxalate and zircanyl ammonium carbonate. 3,705,004, Cl. 8-52.000.

Conner, Edmond E.: *See—*
Gotal, Joseph; and Conner, Edmond E., 3,705,372.

Consolidated Controls Corporation: *See—*
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Constantin, Jean-Claude, to Thomson-CSF. Real time fourier transform processor with sequential access memory. 3,704,826, Cl. 235-156.000.

Continental Can Company, Inc.: *See—*
Moller, Jens L., 3,704,677.

Continental Oil Company: *See—*
Blubaugh, Robert L.; Ruckle, Robert A.; and Watts, Hubert J., 3,704,522.
Campbell, Hollis O.; Fetrow, John W.; and Mitchell, Kim L., 3,704,681.

Conway, Alvin C.: *See—*
Moore, George G. I.; and Conway, Alvin C., 3,705,185.

Cook, Melvin S., to Holobeam, Inc. High-capacity optical image scanning memory system and card verification system. 3,705,293, Cl. 235-61.70b.

Cookson Sheet Metal Developments Limited: *See—*
Cookson, William, 3,704,643.

Cookson, William, to Cookson Sheet Metal Developments Limited. Flying shear. 3,704,643, Cl. 83-294.000.

Coombs, Peter M.; Davey, Ernest; and Kowalski, Conrad Edward, to Sylvania Electric Products, Inc. Dental light with dichroic and infrared filters. 3,704,928, Cl. 350-1.000.

Cooper, Carroll C.: *See—*
Rhoades, John M.; and Cooper, Carroll C., 3,705,339.

Coquard, Lucien, to Societe Industrielle de Travaux Electro-Mecaniques-(S.I.T.E.M.). Method of manufacturing rotating commutators, particularly adapted for automatic machine assembly. 3,704,513, Cl. 29-597.000.

Corco, Inc.: *See—*
Croley, Thomas E., 3,704,824.

Cordes, Edward V., Jr., to Warner & Swasey Company, The. Error-compensated position determining. 3,705,400, Cl. 340-347.00r.

Corkerill-Ougree-Providence et Esperance: *See—*
Van Den Bulcke, Emile Oscar, 3,704,874.

Cormier, Louis A. Curtain rod support. 3,704,851, Cl. 248-265.000.

Corte, Francisco Barcelloni. Manual labeling device. 3,704,771, Cl. 197-6.700.

Coster Tecnologie Speciali S.p.A.: *See—*
Ruscitti, Tomaso, 3,704,814.

Couret, Robert F.: *See—*
Lapeyre, James M.; and Couret, Robert F., 3,704,484.

Craggs, Donald E.; and Gillen, Richard S., to Union Oil Company of California. Floating oil skimmer. 3,704,784, Cl. 210-242.000.

Creative Ideas, Inc.: *See—*
Harden, Joseph T., Jr., 3,704,811.

Croley, Thomas E., to Corco, Inc. Fiberboard flat with joined strengthened corners for setting up into an angular tray and the set-up tray. 3,704,824, Cl. 229-32.000.

Cronquist, Donald Harry, to International Business Machines Corporation. Video strip file and system. 3,705,413, Cl. 179-100.zpm.

Cronstedt, Val, to Teledyne Industries, Inc. Valve construction for variable compression ratio piston. 3,704,695, Cl. 123-78.00b.

Cropp, David. Golf cart. 3,704,758, Cl. 180-19.00r.

Currie, Bruce L.: *See—*
Robins, Morris J.; and Currie, Bruce L., 3,705,147.

Cuscurida, Michael, to Jefferson Chemical Company, Inc. Moisture-cured coating compositions. 3,705,132, Cl. 260-75.0np.

Custer, Willard R. Contoured stack of jet engine with channel wing aircraft. 3,704,842, Cl. 244-12.0cw.

Cvacho, Daniel S.; and Lee, Harry W., Jr., to Reynolds Metals Company. Method and apparatus for making a drawn article. 3,704,618, Cl. 72-336.000.

Cyba, Henryk A., to Universal Oil Products Company. Polymeric flame retardant compositions. 3,705,127, Cl. 260-881.000.

Daiichi Seiyaku Co., Ltd.: *See—*
Nakazawa, Shozo; and Ikeda, Osamu, 3,705,243.

Daimler-Benz Aktiengesellschaft: *See—*
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Daino, Peter R.: *See—*
Peil, William; Daino, Peter R.; and Sauter, Lon J., 3,705,367.

Dalke, James A., to Metro Data Corporation. DC voltage regulator and impedance converter. 3,705,342, Cl. 323-22.00t.

Dalson, Milton H.; Keith, Carl D.; Mooi, John; and Pfefferle, William C. Plural stage platinum catalyst reforming with rhenium in the last stage. 3,705,095, Cl. 208-65.000.

Dambach, Richard W. Chart board and method for demonstrating band formations and maneuvers. 3,704,532, Cl. 35-29.00r.

Damgaard, Lavritz Gudmund: *See—*
Duhring, Ornolf; and Damgaard, Lavritz Gudmund, 3,704,568.

Dancer, Stuart Neil: *See—*
Hall, Antony Harold Patrick; and Dancer, Stuart Neil, 3,705,152.

Danhauser, Justus: *See—*
Vetter, Hans; Danhauser, Justus; Kabitzke, Karlheinz; Marx, Paul; Melzer, Arnfried; Pelz, Willibald; and Puschel, Walter, 3,705,035.

Daniel, Martin L.; and Sacks, George E. Flail-type irrigation ditch cleaner. 3,704,575, Cl. 56-12.700.

Daniels, Alma U., to Du Pont de Nemours, E. I., and Company. Cutting tool. 3,705,025, Cl. 51-309.000.

Danree, Bernard: *See—*
Malen, Charles; Danree, Bernard; and Laubie, Michel, 3,705,167.

Darby, James G.; and Clearman, Jack F., to Whirlpool Corporation. Compression means for flake ice maker. 3,704,599, Cl. 62-354.000.

Darmagnac, Tarbes Jean Eugene: *See—*
Decot, Claude Jean Maurice; and Darmagnac, Tarbes Jean Eugene, 3,704,989.

Darnell Corporation, Ltd.: *See—*
Thiessen, Walter H., 3,704,979.

Datapac, Incorporated: *See—*
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Davey, Ernest: *See—*
Coombs, Peter M.; Davey, Ernest; and Kowalski, Conrad Edward, 3,704,928.

Davey, Murray Allan: *See—*
Leyburn, Derek; and Davey, Murray Allan, 3,705,275.

Davies, Walter J.; Hatton, Barry; Boyd, George C.; and Hanlan, Harvey E. W., to Kanting Oilfield Services Ltd. Sludge incinerator. 3,704,676, Cl. 110-8.00r.

Davis, Carlton J., Sr.: *See—*
Preston, Jerome A.; and Davis, Carlton J., Sr., 3,705,125.

Davis, Ralph A.; and Tigner, Ronald G., to Dow Chemical Company, The. Recovery of bromine from organic bromides. 3,705,010, Cl. 423-502.000.

Davis, Richard P.; and Dunlap, Philip A., 33 1/3 to Hanson, Barbara. String depressor and method of using same. 3,704,646, Cl. 84-454.000.

Davis, William A., to Vongrey, Michael L., Jr. Method of subsidence and acid entrained drainag control and admixtures therefor. 3,704,594, Cl. 61-36.

Dawson, Gary D.: *See—*
Sarto, Jorma O.; and Dawson, Gary D., 3,704,698.

De Bell, Lawrence R.; and Price, David D., Jr., to Economy Co. Audio tutoring device including recording capability. 3,705,271, Cl. 179-100.2md.

De Berardinis, Albert J., to Atlas Chemical Industries,Inc. Alkali treated hydrogenation catalyst. 3,705,199, Cl. 260-635.00c.

De Castiglione, Roberto: *See—*
Bernardi, Luigi; Bosisio, Germano; De Castiglione, Roberto; and Goffredo, Onofrio, 3,705,140.

De Demandolx Dedons, Pierre; Giroud, Gerard; and Delaunay, Daniel, to Port Autonome de Dunkerque. Plant for unloading and handling loose solid material. 3,704,796, Cl. 214-14.000.

De Gough, Kirby: *See—*
Estes, James D.; and De Gough, Kirby, 3,704,749.

De Steese, John G., to McDonnell Douglas Corporation. Shock and thermal isolation package for thermionic. 3,705,411, Cl. 174-17.050.

Deboo, Gordon J.: *See—*
Burrous, Clifford N.; and Deboo, Gordon J., 3,705,316.

Decca Limited: *See—*
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Decktronic, Inc.: *See—*
Doble, Henry P., Jr.; and Langelan, Harry C., 3,705,056.

Decot, Claude Jean Maurice; and Darmagnac, Tarbes Jean Eugene, to Etat Francois represente par le Ministre d'etat charge de la Defense National Delegation Ministeriell pour de la Porte d'Issy. Device for the simultaneous coupling and uncoupling of a pluralty of fluid pipelines. 3,704,989, Cl. 137-595.000.

Delaunay, Daniel: *See—*
De Demandolx Dedons, Pierre; Giroud, Gerard; and Delaunay, Daniel, 3,704,796.

DEMAG Aktiengesellschaft: *See—*
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Denis, Richard E.: *See—*
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Denis, Richard E.; Sliwkowski, Joseph J.; and Fryklund, Gilbert, to Computervision Corporation. Photoplotter accurate film locating mechanism. 3,704,945, Cl. 355-40.000.

Depoorter, Henri: *See—*
Philippaerts, Herman Adelbert; Ghys, Theofiel Hubert; and Depoorter, Henri, 3,705,038.

Derwin, Louis A. Cutting tool. 3,704,497, Cl. 29-96.000.

Deterling, Thomas M. Rotating rod saw and method of making same. 3,704,517, Cl. 408-26.000.

Deutsche Telephonwerk und Kabelindustrie-Aktiengesellschaft: *See—*
Fuchs, Walter; and Esche, Horst, 3,704,514.

Devel, Daniel T., to Fuller Company. Material cooler with recycling of cooling gas. 3,704,525, Cl. 34-164.000.

Devol, George C. Valve systems for non-refillable containers. 3,704,813, Cl. 222-147.000.

Dewhurst, Paul E., to Kinetic Science Corporation. Spring wound timer and cam mechanism. 3,704,581, Cl. 58-21.130.

Dewhurst, Peter B., to Xerox Corporation. Analytical procedures and compositions therefor. 3,705,013, Cl. 23-230.00b.

Dick, A. B., Company: *See—*
Zabiak, Daniel M., 3,705,043.

Didszuhn, Wolfgang. Bellows sleeve. 3,704,894, Cl. 277-212.0fb.

Diehl, Roy E., to Ford Motor Company. Low silhouette dual flow stage carburetor. 3,704,867, Cl. 261-62.000.

Dieterich, Dieter: *See—*
Honig, Hans Ludwig; Balle, Gerhard; Keberle, Wolfgang; and Dieterich, Dieter, 3,705,164.

Dietrich Manufacturing Company: *See—*
Dietrich, William J., 3,704,916.

Dietrich, William J., to Dietrich Manufacturing Company. Flangeless hub for tractor. 3,704,916, Cl. 301-1.000.

DiGiambattista, Vincent N. Process for compacting metallic powders. 3,704,508, Cl. 29-420.500.

Dillman, Thayer L.: *See—*
South, William H.; and Dillman, Thayer L., 3,705,331.

Dobies, Edwin F.: *See—*
United States of America, National Aeronautics and Space Administration, 3,704,659.

Doble, Henry P., Jr.; and Langelan, Harry C., to Decktronic, Inc. Method for producing and operating a fuel cell. 3,705,056, Cl. 136-86.00e.

Dobo, Emerick J. Cary; Kim, Don W.; and Mallonee, William C., to Monsanto Company. Process and apparatus for producing non-woven fabrics. 3,705,068, Cl. 156-441.

Dobson, Richard N.; Boyce, Kenneth E.; Gaiser, John A.; and Gris, Conrad David, to Dominion Foundries & Steel Limited. Stabilizing high speed railway trucks. 3,704,670, Cl. 105-201.000.

Dockerty, Robert Charles: *See—*
Bleher, Johannes Hartmut; Chang, Chi Shih; and Dockerty, Robert Charles, 3,705,419.

Dolgova, Ekaterina Nikolaevna: *See—*
Plachenov, Tikhon Grigorievich; Belotserkovsky, Grigory Markovich; Dolgova, Ekaterina Nikolaevna; Ezhov, Jury Valentinovich; Fogel, Vladimir Alexandrovich; Benediktov, Andrei Pavlovich; and Avilov, Iliya Yakovlevich, 3,704,806.

Dome, Peter, to Societe Suisse pour l'Industrie Horlogere SA. Date indicating mechanism for watches. 3,704,583, Cl. 58-58.000.

Dominion Foundries & Steel Limited: *See—*
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Don, Gunter, to Siempelkamp, G., & Co. Apparatus for forming a stack. 3,704,883, Cl. 271-72.000.

Doroshin, Sergei Mikhailovich: *See—*
Kharitonov, Gennady Grigorievich; Nebytov, Anatoly Mitrofanovich; Doroshin, Sergei Mikhailovich; and Alimova, Mariana Sergeevna, 3,704,865.

Dorr-Oliver Incorporated: *See—*
Jablon, Theodore M.; and Raynor, Russell C., 3,704,789.

Dotson, Billy R.; Schrader, Robert W.; Twomey, Marilyn A.; and Williams, Robert F., Jr., to Eastman Kodak Company. Photographic films on heat resistant cellulose triacetate. 3,705,148, Cl. 260-227.000.

Dougherty, Charles, to Grace, W. R., & Co. Heat recycling for ammonia preparation. 3,705,009, Cl. 423-361.000.

Douty, Donald L., to United States Steel Corporation. Can end with banded seal slides. 3,704,818, Cl. 222-484.000.

Dover Corporation: *See—*
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Dow Chemical Company, The: *See—*
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Bertram, James L.; and Bowen, David O., 3,705,115.
Clark, Michael W., 3,705,193.
Davis, Ralph A.; and Tigner, Ronald G., 3,705,010.
Foerster, George S., 3,705,029.
Head, Billy D.; Fraini, Edward A.; and Martin, George R., 3,705,097.
Smith, Harry A., 3,705,146.
Smith, William E., 3,705,203.
Torba, Florence E., 3,705,170.
Walles, Wilhelm E.; McIntire, Otis R.; Rieke, James K.; and Griggs, Max V., 3,705,041.

Dow Corning Corporation: *See—*
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Drab, Edwin H.: *See—*
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Drabek, Jozef: *See—*
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Drelicharz, Joseph A., to United States of America, Navy. Light weight pallet construction. 3,704,673, Cl. 108-53.000.

Dresser Industries, Inc.: *See—*
Hopkinson, Eric C.; and Youmans, Arthur H., 3,705,304.

Drexel University: *See—*
Herczfeld, Bonita Falkner; Herczfeld, Peter R.; and Klafter, Richard D., 3,704,706.

Drill Carrier Corporation: *See—*
Buress, John W., II, 3,704,757.

Dryon, Jacques Max Charles, to Ateliers Heuze, Malevez & Simon Reunis, Societe Anonyme. Apparatus for incising a web of glass. 3,704,642, Cl. 83-11.000.

DSO "Balkancar": *See—*
Vitkov, Eil Slavchev; Petkov, Milko Ivanov; and Atanassov, Gueorgui Stoylov, 3,704,759.

Du Pont de Nemours, E. E., and Company: *See—*
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Du Pont de Nemours, E. I., and Company: *See—*
Adams, Charles D.; and Wommack, Joel B., Jr., 3,705,173.
Baird, Eugene M.; and Ullman, John G., 3,704,971.
Bunger, Fred Lee; and Moore, Earl Phillip, Jr., 3,705,183.

Bunting, William W., Jr.; Buskirk, Robert E.; Hogan, John P.; and Mahla, Elbert M., 3,704,975.
Daniels, Alma U., 3,705,025.
Fintel, William Achard; Heighton, Harold Hubbard; and Rossman, John Guise, Jr., 3,705,227.
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Selby, Richard N.; and Williams, Donald M., 3,705,124.
Taylor, Robert Edward, 3,705,225.
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Duff-Norton Company, Inc.: *See—*
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Duhring, Ornolf; and Damgaard, Lavritz Gudmund, to Struers, H., Chemiske Laboratorium. Apparatus for the filling of petri dishes. 3,704,568, Cl. 53-109.000.

Dunlap, Philip A.: *See—*
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Dunphy, Gerald P.: *See—*
Penton, Hugh V.; and Dunphy, Gerald P., 3,704,535.

Durkoppwerke GmbH: *See—*
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Eastman Kodak Company: *See—*
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Eaton Corporation: *See—*
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Haurykiewicz, John M., 3,705,314.
Hill, Donald C., 3,704,893.
Holton, Robert J., 3,704,739.
Jaeschke, Ralph L., 3,704,766.
Schmitz, Ambrose J.; McCarty, William R.; and Erickson, Howard L., 3,704,721.
Trabbic, Gerald W., 3,704,588.

Eaton Yale & Towne GmbH: *See—*
Kloosterziel, Heinz, 3,704,608.

Ecker, Fred L. Method for casting material using a collapsible structure. 3,705,220, Cl. 264-31.000.

Eckhart, Edgar O., to Becton, Dickinson and Company. Probe for electronic medical device. 3,704,705, Cl. 128-2.00h.

Ecodyne Corporation: *See—*
Goodman, Brian L.; and Higgins, Robert B., 3,704,788.
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Economy Co.: *See—*
De Bell, Lawrence R.; and Price, David D., Jr., 3,705,271.

Edenhofer, Albrecht; and Spiegelberg, Hans, to Hoffmann-La Roche, Inc. Heterocyclically substituted dibenzo (a,d) cycloheptа (dien-5-ones). 3,705,168, Cl. 260-293.620.

Edwards, Albert, to Baker Perkins Limited. Method and apparatus for manufacture of cold setting foundry moulds and cores. 3,704,743, Cl. 164-21.000.

Edwards, John A.; Fried, John H.; and Mills, John S., to Chemie Grunenthal G.m.b.H. 16B-Difluoromethyl and 16-difluoromethylene steroids and processes for their preparation. 3,705,182, Cl. 260-397.400.

Efimov, Alexander: *See—*
Kay, George; and Efimov, Alexander, 3,704,886.

Eftestol, Bard; and Osteng, Tor, to A/S Raufoss Ammunisjonsfabrikker. Arrangement in joining electric insulated multi-core cables. 3,705,256, Cl. 174-88.00r.

Ego Werke AG: *See—*
Nigg, Paul, 3,704,779.

Egyesult Gyogyszer es Tapszergyar: *See—*
Magdanyi, Laszlo; Gelleri, Andras; Pallos, Laszlo; Erdelyi, Lujza, nee Petocz; and Gorog, Peter, 3,705,175.

Eickenhorst, Frank C., to Minster Machine Company, The. Workpiece transfer mechanism. 3,704,775, Cl. 198-218.000.

Einhorn, Stanley C., to Budd Company, The. Reinforced cast nylon coupling element. 3,704,602, Cl. 64-11.00r.

Elco Corporation, mesne: *See—*
Hutner, Mark A., 3,704,999.

Electrohome Limited: *See—*
Kitchener, Andrew Rajna, 3,704,923.
lovely, John D., 3,705,259.
Russell, William G., 3,705,356.

Elkins, Luejene, to Bunker-Ramo Corporation, The. Cover for feed-through connector. 3,705,378, Cl. 339-156.00r.

Elliott Business Machines, Inc., mesne: *See—*
Kuehnle, Manfred R.; Kok, Jurgen; and Jochimsen, Dieter, 3,705,294.

Elphiac: *See—*
Binard, Pierre C., 3,705,284.

Elrod, Ernest; and Viescas, Arthur B., to Mead Corporation, The. Film splicing device. 3,705,069, Cl. 156-502.000.

Eltec, Inc.: *See—*
Kerr, Charles F., Jr., 3,705,279.

Emhart Corporation: *See—*
Kulig, Constantine W., 3,704,623.

Emmons, William D.; Moser, Vincent J.; Brodnyan, John G.; and Shachat, Norman, to Rohm and Haas Company. Highly absorbent bonded non-woven fabrics and foamed articles having rewettability. 3,705,053, Cl. 117-140.00a.

Emmons, William D.; and Levy, Jerome F., to Rohm and Haas Company. Ester isocyanates. 3,705,189, Cl. 260-485.00j.

Energoresursov Predpriaty Chernoi Metallurgii: *See—*
Andoniev Sergei Mikhailovich; Zhigulev, Petr Georgievich; Kudinov, Gennady Alexandrovich; Filipiev, Oleg Vladimirovich; and Energoresursov Predpriaty Chernoi Metallurgii, 3,704,747.

Engel, Robert F., to Shell Oil Company. Well production method and apparatus. 3,704,567, Cl. 55-43.000.

Enterprise Machine Products Corporation: *See—*
Loren, Norman S.; and Porter, Theodore L., 3,704,795.

Entwistle Company, The: *See—*
Manoogian, Dickran, 3,704,839.

Environment/One Corporation: *See—*
Bird, Douglas, 3,704,952.

Environmental Purification Systems, Inc.: *See—*
Hunter, Allen Bruce, 3,705,099.

Erdco Engineering Corporation: *See—*
Townsley, Malcolm G., 3,705,014.

Erdelyi, Lujza, nee Petocz: *See—*
Magdanyi, Laszlo; Gelleri, Andras; Pallos, Laszlo; Erdelyi, Lujza, nee Petocz; and Gorog, Peter, 3,705,175.

Erickson, Howard L.: *See—*
Schmitz, Ambrose J.; McCarty, William R.; and Erickson, Howard L., 3,704,721.

Erlich, Giora: *See—*
Lerner, Marc; and Erlich, Giora, 3,704,786.

Esche, Horst: *See—*
Fuchs, Walter; and Esche, Horst, 3,704,514.

Eshelman, Phillip V. Throttle return spring redundancy system. 3,704,635, Cl. 74-482.000.

Espen, David A., to Sperry Rand Corporation. Wideband constant amplitude-variable phase circuit. 3,705,344, Cl. 323-109.000.

Esso Research and Engineering Company: *See—*
Ashcraft, Thomas L., Jr., 3,705,093.
Bunting, William; and Langer, Arthur W., Jr., 3,705,200.
Miller, Alfred H., 3,705,155.
Zimmerman, Abraham A.; Furlong, Louis E.; and Shannon, Hugh F., 3,705,024.

Estes, James D.; and De Gough, Kirby, to N L Industries, Inc. Method and apparatus for tool orientation in a bore hole. 3,704,749, Cl. 166-255.000.

Etablissements Anver S.A.: *See—*
Gras, Elie, 3,705,071.

Etablissements Butin-Gillet: *See—*
Tellot, Raymond Jean Bernard, 3,704,983.

Etat Francois represente par le Ministre d'etat charge de la Defense National Delegation Ministeriell pour de la Porte d'Issy: *See—*
Decot, Claude Jean Maurice; and Darmagnac, Tarbes Jean Eugene, 3,704,989.

Ethyl Corporation: *See—*
Berry, Currie B., Jr.; and Fanning, Robert J., 3,705,030.
Kobetz, Paul; Becker, Warren E.; and Giraitis, Albert P., 3,705,051.

Excel Electrical Supply Co.: *See—*
Harms, Harry Keith, 3,705,280.

Ezhov, Jury Valentinovich: *See—*
Plachenov, Tikhon Grigorievich; Belotserkovsky, Grigory Markovich; Dolgova, Ekaterina Nikolaevna; Ezhov, Jury Valentinovich; Fogel, Vladimir Alexandrovich; Benediktov, Andrei Pavlovich; and Avilov, Iliya Yakovlevich, 3,704,806.

Faber, Jan Willem Hendrik: *See—*
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Fabrica de Utilaje Si Piese de Schimb "Metalotehnico": *See—*
Kolozsvari, Zoltan; and Gal, Endre, 3,705,058.

Fabricated Metals, Inc.: *See—*
Coleman, Clarence B., 3,704,722.

Fanning, Robert J.: *See—*
Berry, Currie B., Jr.; and Fanning, Robert J., 3,705,030.

Fanselow, Hyman. punch card viewer. 3,704,938, Cl. 350-241.000.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, 3,705,172.
Gottschlich, Alois; and Leverenz, Klaus, 3,705,145.
Honig, Hans Ludwig; Balle, Gerhard; Keberle, Wolfgang; and Dieterich, Dieter, 3,705,164.
Peters, Karl-Heinz; and Neeff, Rutger, 3,705,178.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Weber, Helmut; Aumuller, Walter; Weyer, Rudi; Muth, Karl; and Stach, Kurt, 3,705,151.

Farley, Charles Edward, to American Cyanamid Company. Preparation of trivalent and pentavalent thio esters of phosphorus. 3,705,216, Cl. 260-970.000.

Faso, William J. Door mounted spraying devices. 3,704,830, Cl. 239-274.000.

Fennell, Lewis Harvey. Automotive headlamp cleaning system. 3,704,481, Cl. 15-250.010.

Fetrow, John W.: *See—*
Campbell, Hollis O.; Fetrow, John W.; and Mitchell, Kim L., 3,704,681.

Fifer, Eugene Clarence. Sanitary pad holder. 3,704,710, Cl. 128-288.000.

Filipiev, Oleg Vladimirovich: *See—*

Andoniev Sergei Mikhailovich; Zhigulev, Petr Georgievich; Kudinov, Gennady Alexandrovich; Filipiev, Oleg Vladimirovich; and Energoresursov Predpriaty Chernoi Metallurgii, 3,704,747.

Fintel, William Achard; Heighton, Harold Hubbard; and Rossman, John Guise, Jr., to Du Pont de Nemours, E. I., and Company. Process and apparatus for quenching melt spun filaments. 3,705,227, Cl. 264-176.00f.

Fischer, Helmut. Instrument for measuring the thickness of layers with radio-active nucleides. 3,705,305, Cl. 250-83.300.

Fischer, Stefan. Apparatus for making hollow articles. 3,704,977, Cl. 425-326.000.

Fischern, Bernhard V.: *See—*
Winkler, Alfred; Zanner, Johann; Fischern, Bernhard V.; and Fuchslf, Klaus, 3,704,941.

Fisher, Albert W., Jr., to McKee Baking Company. Apparatus for forming swiss rolls. 3,704,664, Cl. 99-450.200.

Fisher, Michael H.; Hoff, Dale R.; and Bochis, Richard J., to Merck & Co., Inc. Polyhaloalkyl benzimidazoles. 3,705,174, Cl. 260-309.200.

Fister, Julius C., Jr., to Olin Corporation. Aluminum-steel composites. 3,705,023, Cl. 29-196.200.

Fix, John W.; Hallum, Charles E.; and Kaufman, Warren F., to Philco-Ford Corporation. Fluid flow control apparatus. 3,704,832, Cl. 239-461.000.

Flamm, James R. Vehicle mounted equipment deck and ramp. 3,704,794, Cl. 214-85.000.

Fletcher, H. E., Co.: *See—*
Fletcher, Ralph Andrew, Jr., 3,704,914.

Fletcher, Ralph Andrew, Jr., to Fletcher, H. E., Co. Method of fluid jet cutting for materials including rock and compositions containing rock aggregates. 3,704,914, Cl. 299-14.000.

FMC Corporation: *See—*
Abbott, John A.; and Watson, Clyde Donald, 3,704,716.
Cohen, Bernard, 3,705,103.
Mesiah, Raymond N.; Beck, William F.; and Goldstein, David, 3,705,019.
Shepherd, John Alexander; and Hobbs, Millice Floyd, 3,705,098.

Foerster, George S., to Dow Chemical Company, The. Dispersing sodium within molten aluminum. 3,705,029, Cl. 75-138.000.

Fogel, Vladimir Alexandrovich: *See—*
Plachenov, Tikhon Grigorievich; Belotserkovsky, Grigory Markovich; Dolgova, Ekaterina Nikolaevna; Ezhov, Jury Valentinovich; Fogel, Vladimir Alexandrovich; Benediktov, Andrei Pavlovich; and Avilov, Iliya Yakovlevich, 3,704,806.

Fogleboch, John Richard: *See—*
Palmer, Fred Irwin; and Fogleboch, John Richard, 3,705,355.

Fomichev, Viktor Nikolaevich: *See—*
Bresler, Semen Efimovich; Kazbekov, Embek Nikolaevich; and Fomichev, Viktor Nikolaevich, 3,705,345.

Ford Motor Company: *See—*
Diehl, Roy E., 3,704,867.

Fork, Kurt; and Fork, Werner, to Siemens Aktiengesellschaft. Control system for a cycloid propeller for ships. 3,704,961, Cl. 416-111.000.

Fork, Werner: *See—*
Fork, Kurt; and Fork, Werner, 3,704,961.

Forsstrom, Sven Gunnar, to Bergmans Motorindustri AB. Device for mounting and centering a work piece for instance in a machine tool. 3,704,640, Cl. 82-44.000.

Forster, Eckehard: *See—*
Giepel, Hans; Forster, Eckehard; and Heinemann, Wilfried, 3,704,610.

Foss, Rudolph G., to Unique Industries, Inc. Tapering tool for tubular articles. 3,704,639, Cl. 82-4.00c.

Fraini, Edward A.: *See—*
Head, Billy D.; Fraini, Edward A.; and Martin, George R., 3,705,097.

Frame, Wayne W.; Gustavson, Roy A.; and Wiltse, James, to Aetna Life & Casuality. RC clutch stall circuit for a driver-trainer simulator. 3,704,526, Cl. 35-11.000.

Frank, Kjell, to Allmanna Svenska Elektriska Aktiebolaget. Inverter. 3,705,341, Cl. 321-5.000.

Franklin, John S.; and Pursley, William C., to General Electric Company. Luminaire reflector and lampholder mounting. 3,705,301, Cl. 240-25.000.

Frankus, Ernst: *See—*
Graudums, Ivars; Mueckter, Heinrich; and Frankus, Ernst, 3,705,162.

Franseth, Paul: *See—*
Thompson, Earl A., 3,704,746.

Franz, William F.; Hess, Howard V.; and Cole, Edward L., to Texaco Inc. Waste disposal process for spent wood-pulping liquors. 3,705,077, Cl. 162-30.000.

Frappe, Pierre, to Societe Verdol S.A. Automatic device for preparing perforated cards or bands for loom jacquards. 3,705,292, Cl. 235-61.60a.

Frayer, William W. Biological sample pattern analysis method and apparatus. 3,705,383, Cl. 340-146.30r.

Frederick, Harold M.: *See—*
Nicol, Edward A.; and Frederick, Harold M., 3,704,793.

Frederick, Harold M.; and Sims, Dewey M., Jr., to Burroughs Corporation. Web tension control device. 3,704,820, Cl. 226-34.000.

Frederick, Richard E.: *See—*
Smith, Thomas F.; and Frederick, Richard E., 3,704,762.

Freeman, James Harry, to United Kingdom Atomic Energy Authority, The. Ion beam sources with tiltable firing angle. 3,705,320, Cl. 313-63.000.

Frey-Portner, Urs.: *See—*
Koller, Hans; and Frey-Portner, Urs., 3,704,573.

Fried, John H.: *See—*
Edwards, John A.; Fried, John H.; and Mills, John S., 3,705,182.

Friedrich Uhde GmbH: *See—*
Mevenkamp, Paul, 3,704,690.

Fryklund, Gilbert: *See—*
Denis, Richard E.; Sliwkowski, Joseph J.; and Fryklund, Gilbert, 3,704,945.
Sliwkowski, Joseph J.; and Fryklund, Gilbert, 3,704,657.

Fryklund, Gilbert; and Denis, Richard E., to Computervision Corporation. Photoplotter mechanism for precise aperture dis positioning. 3,704,655, Cl. 95-12.000.

Fuchs, Walter; and Esche, Horst, to Deutsche Telephonwerk und Kabelindustrie-Aktiengesellschaft. Sealed armature contact relay making process. 3,704,514, Cl. 29-622.000.

Fuchslf, Klaus: *See—*
Winkler, Alfred; Zanner, Johann; Fischern, Bernhard V.; and Fuchslf, Klaus, 3,704,941.

Fuj Polymer Industries Co., Ltd.: *See—*
Kawaguchi, Nobuhisa, 3,705,120.

Fuji Photo Film Co., Ltd.: *See—*
Amano, Hiroyuki; Ohi, Reiichi; and Shirasu, Kazuo, 3,705,036.
Honjo, Satoru; Takimoto, Masaaki; Matsumoto, Seiji; and Kosuge, Kuniko, 3,705,032.

Fujimori, Yoshiaki, to Kabushiki Kaisha Suwa Seikosha. Waterproof watch with improved seal construction. 3,704,584, Cl. 58-90.00r.

Fujita, Masuo: *See—*
Ohga, Shizuo; Yasutomi, Hideatsu; and Fujita, Masuo, 3,705,252.

Fujitsu Limited: *See—*
Noyori, Yasuyuki; Uehira, Eiji; and Katayama, Tadao, 3,705,273.
Yoshitake, Norito; Imazeki, Ryoji; and Ishida, Hiroshi, 3,705,418.

Fuller Company: *See—*
Boyhont, Donald S.; and Souders, Marvyn L., 3,704,917.
Devel, Daniel T., 3,704,525.

Furlong, Louis E.: *See—*
Zimmerman, Abraham A.; Furlong, Louis E.; and Shannon, Hugh F., 3,705,024.

Furst, Jozef; and Hovik, J. Kjell, to Datapac, Incorporated. Circulating current minimization scheme for a ready-only memory. 3,705,420, Cl. 340-174.0sp.

Fuse, Yuzo: *See—*
Naruse, Oyhsuke; Ashiya, Ryosuke; Nii, Takehiko; and Fuse, Yuzo, 3,705,322.

GAF Corporation: *See—*
Catino, Sigmund C.; and Strobel, Albert F., 3,705,234.
Vogel, Calvin; and Randall, David I., 3,705,215.
Vogel, Calvin, 3,705,217.

Gagnon, Kenneth M. Waterfowl decoy. 3,704,538, Cl. 43-3.000.

Gaiser, John A.: *See—*
Dobson, Richard N.; Boyce, Kenneth E.; Gaiser, John A.; and Gris, Conrad David, 3,704,670.

Gal, Endre: *See—*
Kolozsvari, Zoltan; and Gal, Endre, 3,705,058.

Galetto, Louis V.; and Ramsey, David A., to International Business Machines Corporation. Adjustable active clamp circuit for high speed solenoid operation. 3,705,333, Cl. 317-148.50r.

Gallo, Mario S.: *See—*
Rosenblatt, Leonard; Horn, Chris C.; and Gallo, Mario S., 3,704,905.

Gandrud, Ebenhard S. Feeding rotor for dispensers of granular material. 3,704,816, Cl. 222-368.000.

Gardenier, Hugh E., to Aronetics, Inc. Process and apparatus for cleaning and pumping contaminated industrial gases. 3,704,570, Cl. 55-84.000.

Gardner, Earl William: *See—*
Withrow, James Bruce; and Gardner, Earl William, 3,704,765.

Gardner, Frank H., to International Harvester Company. Combine automatic header height control. 3,704,574, Cl. 56-10.200.

Gatsis, John G., to Universal Oil Products Company. Solvent extraction of coal by a heavy oil. 3,705,092, Cl. 208-8.000.

Gatzi, Karl: *See—*
Weis, Claus Dieter; and Gatzi, Karl, 3,705,195.
Weis, Claus Dieter; and Gatzi, Karl, 3,705,251.

Geary, Arthur L.: *See—*
Nunes, John; Geary, Arthur L.; and Roberts, John A., 3,704,877.

Gee, Bernard Arthur: *See—*
Marten, John Anthony; and Gee, Bernard Arthur, 3,704,624.

Geer Hydraulics, Inc.: *See—*
Sedley, Bruce S., 3,705,277.

Geigy Chemical Corporation: *See—*
Bohner, Beat; and Rufenacht, Kurt, 3,705,240.
Weis, Claus Dieter; and Gatzi, Karl, 3,705,251.

Gelenkwellenbau GmbH: *See—*
Kleinschmidt, Hans-Joachim; and Schultenkampger, Josef, 3,704,922.

Gelleri, Andras: *See—*
Magdanyi, Laszlo; Gelleri, Andras; Pallos, Laszlo; Erdelyi, Lujza, nee Petocz; and Gorog, Peter, 3,705,175.

Genequand, Pierre, to Battelle Memorial Institute. Vacuum interrupter or switch for electric power networks. 3,705,144, Cl. 200-144.00b.

General Electric Company: *See—*
Abercrombie, Jonathan C., 3,704,906.
Franklin, John S.; and Pursley, William C., 3,705,301.
Grubb, Willard T., 3,705,089.
Hooker, John M., 3,704,511.
Judge, John R.; and Kilpatrick, Robert G., 3,705,302.
Meier, Otto H., 3,704,772.
Mundy, Joseph L., 3,705,390.
Nedreski, Robert Joseph, 3,704,556.
Niedrach, Leonard W.; and Grubb, Willard T., 3,705,088.
Peil, William; Daino, Peter R.; and Sauter, Lon J., 3,705,367.
Phelps, Dolphus H., 3,704,964.
Plemmons, Jerry R.; and Raymond, Mark H., 3,705,300.
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Rhoades, John M.; and Cooper, Carroll C., 3,705,339.
Smith, Thomas F.; and Frederick, Richard E., 3,704,762.
Willis, Candler A., Jr.; and Judge, John R., 3,705,303.

General Housewares Corporation: *See—*
Shull, Robert W.; and Thompson, Ronald, 3,704,663.

General Motors Corporation: *See—*
Morden, Russell L.; and Perkins, Ralph W., 3,704,637.

General Technical Services, Inc.: *See—*
Iberall, Arthur S., 3,704,708.

General Trailer Co., Inc.: *See—*
Schmidt, Kenneth J., 3,704,898.

Georgia-Pacific Corporation: *See—*
Howe, William J., 3,704,823.

Gerber, Jerome J. Tow hitch. 3,704,900, Cl. 280-491.00d.

Gerdts, Gustav F., KG: *See—*
Rudel, Kurt, 3,704,718.

Gerkema, Jan T., to U.S. Philips Corporation. Self-adjusting supporting member having a magnetic head. 3,705,397, Cl. 340-174.10e.

Gerlach, Klaus: *See—*
Meyer, Ernst; Grimm, Wolfgang Erlenbach; Gerlach, Klaus; and Linhart, Helmut, 3,704,863.

Germanton, Charles Elias. Pushbutton combination lock. 3,704,607, Cl. 70-220.000.

Getex Consult AG: *See—*
Kleineaschoff, Josef; and Kleineaschoff, Brunhilde, 3,704,888.

Gevaert-Agfa N.V.: *See—*
Philippaerts, Herman Adelbert; Ghys, Theofiel Hubert; and Depoorter, Henri, 3,705,038.

Ghys, Theofiel Hubert: *See—*
Philippaerts, Herman Adelbert; Ghys, Theofiel Hubert; and Depoorter, Henri, 3,705,038.

Gibson, Charles I.; and Maley, Wayne A., to United States Steel Corporation. Rim lift bins. 3,704,808, Cl. 220-97.00c.

Giepel, Hans; Forster, Eckehard; and Heinemann, Wilfried, to Huttenwerk Aberhausen A.G. Wire-coil winder. 3,704,610, Cl. 72-11.000.

Giesy, Jerry D.; Smith, Gordon E.; and Schneider, Jack M., to Medidyne Corporation. Dilator device. 3,704,712, Cl. 128-345.000.

Gilewski, Heinz; and Wolf, Jurgen, to Volkswagenwerk Aktiengesellschaft. Internal combustion engine with an air inlet valve and a fuel injection valve. 3,704,694, Cl. 123-32.0vn.

Gillen, Richard S.: *See—*
Craggs, Donald E.; and Gillen, Richard S., 3,704,784.

Giraitis, Albert P.: *See—*
Kobetz, Paul; Becker, Warren E.; and Giraitis, Albert P., 3,705,051.

Giraudon, Marc: *See—*
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Girling Limited: *See—*
Hoenick, Hermann H., 3,704,652.

Giroud, Gerard: *See—*
De Demandolx Dedons, Pierre; Giroud, Gerard; and Delaunay, Daniel, 3,704,796.

Giroud, Germain. Walking dolls. 3,704,543, Cl. 46-150.000.

Gittelman, Donald Henry: *See—*
Christensen, Gary Lee; and Gittelman, Donald Henry, 3,705,055.

Givner, Morris L.: *See—*
Marshall, David J.; and Givner, Morris L., 3,705,179.

Glaesener, Ernest, to Arbed Acieries Reunies de Burbach- Eich-Dudelange S.A. Roadway guard-rail assembly. 3,704,861, Cl. 256-13.100.

Glaze, John W., Jr., to Intech Corporation. Method of and apparatus for producing hosiery. 3,704,565, Cl. 53-21.0fw.

Gley, Paul R., to Rex Chainbelt Inc. Container latch system. 3,704,907, Cl. 292-257.000.

Globe Illumination Company: *See—*
Rosenblatt, Leonard; Horn, Chris C.; and Gallo, Mario S., 3,704,905.

Goeller, Leonard A.: *See—*
Hausler, Rudolf H.; and Goeller, Leonard A., 3,705,109.

Goffredo, Onofrio: *See—*
Bernardi, Luigi; Bosisio, Germano; De Castiglione, Roberto; and Goffredo, Onofrio, 3,705,140.

Goldie, Harry; and Goldman, Michael, to Westinghouse Electric Corporation. Electrodeless gas discharge devices employing tritium as a source of ions to prime the discharge. 3,705,319, Cl. 313-54.000.

Goldman, Michael: *See—*
Goldie, Harry; and Goldman, Michael, 3,705,319.

Goldstein, David: *See—*
Mesiah, Raymond N.; Beck, William F.; and Goldstein, David, 3,705,019.

Gonzales, Ramon L. Birth control valve. 3,704,704, Cl. 128-1.00r.

Goodman, Brian L.; and Higgins, Robert B., to Ecodyne Corporation. Sewage treatment system. 3,704,788, Cl. 21-401.000.

Goodrich, B. F., Company, The: *See—*
Neff, Harry F.; and Sabo, Stephen C., 3,705,224.

Goodyear Tire & Rubber Company, The: *See—*
Turk, David L., 3,704,741.

Gorkiewicz, Walter Joseph; and Van Raalte, John A., to RCA Corporation. Achromatic depth-of field correction for off-axis optical system. 3,704,936, Cl. 350-161.000.

Gorog, Peter: *See—*
Magdanyi, Laszlo; Gelleri, Andras; Pallos, Laszlo; Erdelyi, Lujza, nee Petocz; and Gorog, Peter, 3,705,175.

Gorog, Sandor: *See—*
Tuba, Zoltan; Bor, Maria, nee Szabo; Komesz, Zoltan; Weitner, Eva, nee Vari; and Gorog, Sandor, 3,705,150.

Gotal, Joseph; and Conner, Edmond E., to Westinghouse Electric Corporation. Cast-type winding structure for electrical inductive apparatus. 3,705,372, Cl. 336-182.000.

Gotoh, Shinji: *See—*
Horie, Tatsuo; Yamamoto, Syunichi; and Gotoh, Shinji, 3,705,204.

Gottschlich, Alois; and Leverenz, Klaus, to Farbenfabriken Bayer Aktiengesellschaft. Disazo dyestuffs. 3,705,145, Cl. 260-152.000.

Goulston, Arthur B.; and Huyffer, Paul S., to Polaroid Corporation. 1:1 Chrome complexed azomethine dye developers. 3,705,184, Cl. 260-438.50r.

Gourdine, Meredith C.; and Sayers, Howard A., to Gourdine Systems, Inc. Electrostatic precipitator system. 3,704,572, Cl. 55-126.000.

Gourdine Systems, Inc.: *See—*
Gourdine, Meredith C.; and Sayers, Howard A., 3,704,572.

Gowings, Dan D.: *See—*
Neff, Ray A.; and Gowings, Dan D., 3,705,405.

Grabl, Sebastian E., to Burroughs Corporation. Motor control system with bridge sensing EMF. 3,705,337, Cl. 318-331.000.

Grace, W. R., & Co.: *See—*
Dougherty, Charles, 3,705,009.

Grandpierre, Robert; and Robert, Alexandre, to Rolland Albert, S.A. Antibiotic substance and process for the extraction of such an antibiotic substance from a new strain of pseudomonas. 3,705,237, Cl. 424-115.000.

Grants, Paul R., to I.F.S. Incorporation. Preformed enclosed insulating filler and insulating strip. 3,704,562, Cl. 52-396.000.

Gras, Elie, to Etablissements Anver S.A. Method of manufacturing thin compound materials, notably for shoemaking. 3,705,071, Cl. 161-116.000.

Graudums, Ivars; Mueckter, Heinrich; and Frankus, Ernst. 4-Phthalimidine glutarimides. 3,705,162, Cl. 260-281.000.

Grauso, Robert N.; and Morena, John J., to Martin, C. F., & Co. Accessory holder for musical instruments of the percussion type. 3,704,645, Cl. 84-421.000.

Green, Martin. Boltless gym set. 3,704,849, Cl. 248-165.000.

Green, Oscar: *See—*
Carpenture, Herbert L., Jr.; and Green, Oscar, 3,704,798.

Greenblatt, Eugene Newton: *See—*
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Grubb, Willard T.: *See—*
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Grubb, Willard T., to General Electric Company. Reference electrode half cell. 3,705,089, Cl. 204-195.00f.

Grube, William L., to MacLean-Fogg Lock Nut Co. Method of fabricating and attaching pierce nuts to a panel. 3,704,507, Cl. 29-417.000.

Grumm, Walter; and Thubeauville, Heinz, to Otto, C., Dr., & Comp. G.m.b.H. Coke oven door having an adjustable levelling bath opening. 3,705,087, Cl. 202-248.000.

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Gudel, Alfred. Workpiece positioning arrangement. 3,704,880, Cl. 269-303.000.

Gueldenpfennig, Klaus; Reehil, Edward G.; and Tryon, Lansing E., to Stromberg-Carlson Corporation. Monitor for timing circuits. 3,705,386, Cl. 340-167.00a.

Guerga, Michel Henri; and Hallier, Bernard Lucien Desire, to International Standard Electric Corportion. Microwave dryer for ceramic articles. 3,704,523, Cl. 34-1.000.

Guerra, John P., to American Optical Corporation. Liquid sample holder for a photometer. 3,705,000, Cl. 356-246.000.

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Haass, Guenther; and Kurek, Heinz. Arrangement for the generation of timing pulses. 3,705,361, Cl. 331-11.000.

Haddock, John S. Bulk fishing line applicator. 3,704,840, Cl. 242-84.20r.

Hahn, Helmut: *See—*
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Hahn, Mathew P., to Allis-Chalmers Manufacturing Company. Unit body vibrating screen with distortion free bearing assemblies. 3,704,782, Cl. 209-326.000.

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Hall, John Matthew, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the. Jet nozzle. 3,704,829, Cl. 239-265.350.

Hall, John N., to Hercules Incorporated. Apparatus for spreading a graphite fiber tow into a ribbon of graphite filaments. 3,704,485, Cl. 19-65.00t.

Halley, James W.; Grimes, Donald E.; Mills, Norman T.; and Yalamanchili, Krishna Rao, to Inland Steel Company. Slag use in continuous casting of steel. 3,704,744, Cl. 164-82.000.

Hallier, Bernard Lucien Desire: *See—*
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Hansen, Eric Lowell; McNoldy, Larry Benjamin; and Pohl, Karl-Heinz, to Bell Telephone Laboratories, Incorporated. Receptacle for snap-in mounting of connectors. 3,705,377, Cl. 339-121.000.

Hansen, Erwin, to International Boiler Works Co., The. Combined steam and high temperature water generating system. 3,704,693, Cl. 122-406.00r.

Hansen, Harry, to Opti-Holding AG. Coupling element for slide fasteners. 3,704,490, Cl. 24-205.100.

Hansen, Robert A.; and Jerchower, Lewis A., to Pioneer Industries, Division of SOS Consolidated, Inc. Automatic closure seal. 3,704,547, Cl. 49-308.000.

Hanson, Barbara: *See—*
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Harada, Hiroshi: *See—*
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Hardison, Leslie C.; and Guerrieri, Salvatore A., to Universal Oil Products Company. System for conditioning flue gas with H_2SO_4. 3,704,569, Cl. 55-4.000.

Hardy, Ralph W. F.; and Holsten, Richard D., to Du Pont de Nemours, E. E., and Company. Symbiotic fixation of atmospheric nitrogen. 3,704,546, Cl. 47-58.000.

Hargreaves, Clifford McDonald: *See—*
Prast, Gijsbert; and Hargreaves, Clifford McDonald, 3,704,600.

Harley, Arthur E. Roll changing system. 3,704,835, Cl. 242-56.00a.

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Harnisch, Heinz: *See—*
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Harr, Jerome Danforth, to International Business Machines Corporation. Remote digital data terminal circuitry. 3,705,264, Cl. 178-88.000.

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Harwood, Louis J.: *See—*
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Harwood, Milton G.; and Harwood, Louis J. Deflectable poultry beak appliance. 3,704,689, Cl. 119-97.00r.

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Hasforth, Hector Bernard; and Wolff, William H., said Hasforth assor. to said Wolff, William H. Ripper shank. 3,704,753, Cl. 172-700.000.

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Hatton, Barry: *See—*
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Haurykiewicz, John M., to Eaton Corporation. Pulse generator. 3,705,314, Cl. 307-266.000.

Hausler, Rudolf H.; and Goeller, Leonard A., to Universal Oil Products Company. Corrosion inhibiting compsoition and use thereo. 3,705,109, Cl. 252-392.000.

Hawkins, William M., to Hercules Incorporated. Digital to analog converter. 3,705,399, Cl. 340-347.0da.

Hayashibara Company: *See—*
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Hayes, C. I., Inc.: *See—*
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Haynes, Harvey H.; Kahn, Lawrence F.; and Hoofnagle, Rodger A. Underwater connecting device. 3,704,679, Cl. 114-51.000.

Haywood, Jesse B. Pipe aligning clamping device. 3,704,503, Cl. 29-200.00p.

Head, Billy D.; Fraini, Edward A.; and Martin, George R., to Dow Chemical Company, The. Process and catalyst for reducing sulfur in hydrocarbons. 3,705,097, Cl. 208-217.000.

Head, Claude D., III, to Texas Instruments, Incorporated. Method of operating a computer to read information from cards. 3,705,416, Cl. 235-61.11e.

Heaton, James W.: *See—*
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Hehr, Laverne F.; and Campbell, Raymond E. Nozzle control valve for sandblasting and like spraying apparatus. 3,704,553, Cl. 51-11.000.

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Heimberger, Helmut, to Opti-Holding. Method of making a slide-fastener coupling element. 3,705,229, Cl. 264-281.000.

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Heinz, Hubert; and Honsberg, Gunter, to Maschinenfabrik Augsburg-Nurnberg AG. Chucking arrangement for hollow cores, particularly for newsprint rolls and the like. 3,704,837, Cl. 242-68.200.

Hellermann, Eberhard: *See—*
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Henderson, Harold B., to Texas Instruments, Incorporated. Air deliverable seismic system. 3,704,764, Cl. 181-.5vm.

Hendrickson, Philip J.; and Resch, Richard J., to Krueger Metal Products, Inc. Telescopically collapsible table leg. 3,704,850, Cl. 248-188.500.

Henkel, Jahs-Joachim: *See—*
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Hercules Incorporated: *See—*
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Mahlman, Bert H.; and Spurlin, Harold M., 3,705,123.
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Herczfeld, Bonita Falkner; Herczfeld, Peter R.; and Klafter, Richard D., to Drexel University. Heart rate and respiratory monitor. 3,704,706, Cl. 128-2.00r.

Herczfeld, Peter R.: *See—*
Herczfeld, Bonita Falkner; Herczfeld, Peter R.; and Klafter, Richard D., 3,704,706.

Hershler, Abe, to Phys-Chemical Research Corporation. Electrode for electric humidity sensor. 3,705,375, Cl. 338-35.000.

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Hetherington, Theodore W., to Tenneco Inc. Pipe manifold flange. 3,704,995, Cl. 285-332.000.

Heusler, Karl; and Woodward, Robert Burns, to Ciba-Geigy Corporation. Tiazacyclic hydroxy compounds and process for their manufacture. 3,705,160, Cl. 260-239.100.

Heyek, Gerhard. Cutter head for dry shaving apparatus. 3,704,518, Cl. 30-346.510.

Heymer, Gero: *See—*
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Hicks, Gerald W., to Wilson, Lee, Engineering Company, Inc. Furnace wall construction. 3,705,253, Cl. 13-20.000.

Higgins, Edward Ted, to Line & Rope Clamps, Inc. Line clamp. 3,704,488, Cl. 24-126.00a.

Higgins, Horatio Leslie, to Westinghouse Brake and Signal Company Limited. Spring-force applying means. 3,704,653, Cl. 92-29.000.

Higgins, Robert B.: *See—*
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Hill, David E. Film processing machine. 3,704,660, Cl. 95-89.00d.

Hill, Donald C., to Eaton Corporation. Piston ring. 3,704,893, Cl. 277-171.000.

Hill, Vincent G.; and Harding, William R., to Carborundum Company, The. Molding of powdered or granular material. 3,705,248, Cl. 264-294.000.

Hinohara, Kango; Nishino, Tadashi; and Harada, Hiroshi, to Kabushiki Kaisha Kumahira Seisakusho. Theft-prevention structure for depositories. 3,704,825, Cl. 232-44.000.

Hinz, Charles Frank, to American Cyanamid Company. Pseudothioureas and salts thereof as virucides. 3,705,250, Cl. 424-322.000.

Hirao, Mamoru: *See—*
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Hirozawa, Koichiro; and Takahashi, Shigeo, to Aisin Seiki Kabushiki Kaisha. Speed changer. 3,704,768, Cl. 192-3.570.

Hirsch, Roger B. Gauging system for press brakes. 3,704,611, Cl. 72-36.000.

Hirschmann, Joachim: *See—*
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Hitachi Chemical Co., Ltd.: *See—*
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Hobart Manufacturing Company, The: *See—*
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Hobbs, Millice Floyd: *See—*
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Hoenick, Hermann H., to Girling Limited. Hydraulic brakes. 3,704,652, Cl. 92-5.000.

Hoeppel, Raymond W. Oil base gel having low viscosity before gelation and method of producing same. 3,705,107, Cl. 252-316.000.

Hoff, Dale R.: *See—*
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Hoffman-La Roche, Inc.: *See—*
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Hokushin Electric Works, Ltd.: *See—*
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Holbrook, Legrand K.; and Ostler, David S., to Medical Development Corporation. Fluid level sensing/control systems. 3,704,724, Cl. 137-392.000.

Holm, Leroy W.: *See—*
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Holmes, Samuel J.; and Woodberry, Frank Joseph, to Union Carbide Corporation. Laser polarizing beam splitter. 3,704,934, Cl. 350-152.000.

Holobeam, Inc.: *See—*
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Holsten, Richard D.: *See—*
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Holton, Robert J., to Eaton Corporation. Fastening device. 3,704,739, Cl. 151-41.700.

Hondermarck, Jean Claude; Bennett, Ian Cameron; and Guillo, Jacques, to British Petroleum Company Limited, The. Cultivation and recovery of micro-organisms. 3,705,082, Cl. 195-28.00r.

Honeywell Inc.: *See—*
Aagard, Roger L.; and Schmit, Francis M., 3,705,395.
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Honig, Hans Ludwig; Balle, Gerhard; Keberle, Wolfgang; and Dieterich, Dieter, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of modified anionic emulsion polymers with anionic polyurethane. 3,705,164, Cl. 260-29.6nr.

Honjo, Satoru; Takimoto, Masaaki; Matsumoto, Seiji; and Kosuge, Kuniko, to Fuji Photo Film Co., Ltd. Electro-photographic materials. 3,705,032, Cl. 96-1.800.

Honsberg, Gunter: *See—*
Heinz, Hubert; and Honsberg, Gunter, 3,704,837.

Hoofnagle, Rodger A.: *See—*
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Hooker, John M., to General Electric Company. Fly's eye lens process. 3,704,511, Cl. 29-592.000.

Hopkinson, Eric C.; and Youmans, Arthur H., to Dresser Industries, Inc. Pulsed neutron well logging apparatus having means to vary neutron generator pulse repetition rate. 3,705,304, Cl. 250-83.30r.

Hopper, Lois H., to Munsingwear, Inc. Concealed wire structure for an outer garment. 3,704,713, Cl. 128-476.000.

Horie, Tatsuo; Yamamoto, Syunichi; and Gotoh, Shinji, to Nippon Oil Company, Limited. Process for recovering conjugated diolefins selectively form A C fraction. 3,705,204, Cl. 260-681.500.

Horn, Chris C.: *See—*
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Horne-Boatright Chemical Company, Inc.: *See—*
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Horvitz, David; and Baugh, William D., to National Distillers and Chemical Corporation. Preparation of 2-substituted quinolines. 3,705,163, Cl. 260-283.0sy.

Houck, Melvin E.: *See—*
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Howard, Homer E., to Howard Associates, Inc. Capacitor discharge ignition system with revolution limiter. 3,704,699, Cl. 123-148.00e.

Howe, William J., to Georgia-Pacific Corporation. Open-top stacking carton and blank therefor. 3,704,823, Cl. 229-32.000.

Howell, Charles Frederick; and Greenblatt, Eugene Newton, to American Cyanamid Company. 7-Amino-2-chloro-11-(4-methyl-1l-piperazinyl) dibenz (b,f) (1,4)-oxazepines acting on the central nervous system. 3,705,245, Cl. 424-250.000.

Huber, William B., to Motorola, Inc. Mounting arrangement for a magnetic tape head including a spherical cam follower and an arcuately shaped. 3,705,270, Cl. 179-100.2ca.

Huey, Stanton E., Jr. Float for a one man hunting blind. 3,704,472, Cl. 9-5.000.

Huffman, Donald; and Majewski, Richard M., to Coleco Industries, Inc. Bowling and pool game apparatus. 3,704,889, Cl. 273-119.00r.

Hughes Aircraft Company: *See—*
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Lydon, Lloyd E.; Steigleder, Charles J.; and Carpenter, Warren E., 3,705,306.

Hughes, David Geoffrey, to Decca Limited. Receivers for phase comparison radio navigation systems. 3,705,403, Cl. 343-105.00r.

Hughes, Robert L.; and Rouse, John E., to Vaskov Industries, Inc. Water heater. 3,704,692, Cl. 122-161.000.

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Huneke, Egon, to Grohe, Friedrich, Armaturenfabrik. Mixing valve for fluids. 3,704,728, Cl. 137-636.100.

Hunt, Curtis R.: *See—*
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Hunter, Allen Bruce, to Environmental Purification Systems, Inc. Separating means and method. 3,705,099, Cl. 210-65.000.

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Hurth, Carl, Maschinen und Zahwad Fabrik: *See—*
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Huther, Gerhard; Roder, Rolf; and Schmidt, Ulrich, to Jenoptik Jena G.m.b.H. Leveling instrument. 3,704,954, Cl. 356-143.000.

Hutner, Mark A., to Elco Corporation, mesne. Automatic stop circuit for motion picture projector. 3,704,999, Cl. 352-92.000.

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Hutton, Duane A.; and Hutton, Michael. Wire tightener. 3,704,858, Cl. 254-81.000.

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Huyck Corporation: *See—*
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Iberall, Arthur S., to General Technical Services, Inc. Blood pressure measuring mechanism. 3,704,708, Cl. 128-2.05e.

I.F.S. Incorporation: *See—*
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Inland Steel Company: *See—*
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Inoue, Eiichi; and Yamase, Toshihiro, to Canon Kabushiki Kaisha. Photochromic composition containing bleached-out dye and a reducing agent therefor. 3,705,037, Cl. 96-89.000.

Intech Corporation: *See—*
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Interlake, Inc.: *See—*
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International Boiler Works Co., The: *See—*
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Ishikawa, Toshikatsu; and Teranishi, Haruo, to Nippon Carbon Company Limited. Method of producing carbon fibers. 3,705,236, Cl. 423-447.000.

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Ito, Isao, to Nippondenso Kabushiki Kaisha. Socket mounting structure of ball-and-socket joint used for coupling link members for driving a windshield wiper for vehicles. 3,704,903, Cl. 287-90.00r.

ITT Industries, Inc.: *See—*
Keller, Hans; and Sauer, Wolfgang, 3,705,362.

Iverson, Keith E. Tension member overload release mechanism. 3,704,633, Cl. 24-230.0al.

Iwatsu Electric Company Limited: *See—*
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Jablon, Theodore M.; and Raynor, Russell C., to Dorr-Oliver Incorporated. Continuous sedimentation tank with center-pier supported sediment raking apparatus. 3,704,789, Cl. 210-531.000.

Jachimek, Thomas P.; and Mulford, Jack A., to Seeburg Corporation of Delaware, The. Arrangement for translating a train of pulses into logic words. 3,705,423, Cl. 340-347.0dd.

Jackson, Byron, Inc.: *See—*
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Jacob, Adir, to LFE Corporation. Gas discharge apparatus. 3,705,091, Cl. 205-312.000.

Jacobs, Gerardus Henricus Johannus. Method of and an apparatus for determining the length of fibers suspended in a liquid. 3,705,348, Cl. 324-71.00r.

Jacobson, David S.: *See—*
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Jaeschke, Ralph L., to Eaton Corporation. Electromagnetic friction coupling. 3,704,766, Cl. 188-164.000.

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Jedvall, Gustaf I.; deceased (by Mogensen, Arne; administrator). Method for measuring the distance to a leakage fault in an electrical conductor. 3,705,346, Cl. 324-52.000.

Jefferson Chemical Company, Inc.: *See—*
Cuscurida, Michael, 3,705,132.

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Jenoptik Jena G.m.b.H.: *See—*
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Jensen, Flemming Edvin, to Smidth, F. L., & Co. Method and apparatus for cooling cement clinker. 3,704,873, Cl. 263-32.00c.

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John, Erwin Roy, to Neuro-Data, Inc. Signal averager. 3,705,297, Cl. 235-150.530.

John, Ronald, to Molins Machine Company Limited. Guards. 3,704,959, Cl. 408-241.00g.

Johnson, Charles J. Fold-up flat topped supports. 3,704,674, Cl. 108-118.000.

Johnson, David R.: *See—*
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Johnson, Fatima N.: *See—*
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Johnson, George R., to Arpax Company, The. Method of assembling a collapsible, reuseable container utilizing an inverted three sided pyramidal shaped trough support fixture. 3,705,062, Cl. 156-69.000.

Johnson, Robert M.; Toby, Dennis E.; and Koch, Robert M., said Toby and said Koch assors. to Addressograph-Multigraph Corporation. Liquid developing apparatus. 3,704,661, Cl. 95-89.00r.

Johnson, Robert M.; and Toby, Dennis E., to Addressograph-Multigraph Corporation. Liquid developing apparatus. 3,704,662, Cl. 95-94.00r.

Jones, Clive Lynn, to National Research Development Corporation. Electrical gas heating apparatus using frequency multiplying circuit and induction blower. 3,705,290, Cl. 219-364.000.

Jones, Edwin K., to Universal Oil Products Company. Apparatus for a catalytic reaction. 3,705,017, Cl. 23-288.00e.

Jones, Robert, to Hoffman Manufacturing Company. Apparatus for filling material into and discharging material from compartments. 3,704,815, Cl. 222-368.000.

Josien, Daniel, to Societe Anonyme Pronal. Inflatable cushions of utility as jacks. 3,704,859, Cl. 254-93.0hp.

Joslyn Mfg. and Supply Company: *See—*
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Judge, James R.: *See—*
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Judge, John R.; and Kilpatrick, Robert G., to General Electric Company. Luminaire. 3,705,302, Cl. 240-78.0lh.

Jung, Herbert F.: *See—*
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Kabana, Walter P.; and King, Charles B., to United States of America, National Aeronautics and Space Administration. Butt welder for fine gauge tungsten/rhenium thermocouple wire. 3,705,288, Cl. 219-101.000.

Kabitzke, Karlheinz: *See—*
Vetter, Hans; Danhauser, Justus; Kabitzke, Karlheinz; Marx, Paul; Melzer, Arnfried; Pelz, Willibald; and Puschel, Walter, 3,705,035.

Kabushiki Kaisha Kumahira Seisakusho: *See—*
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Kabushiki Kaisha Ricoh: *See—*
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Kabushiki Kaisha Rinnai Seisakusho: *See—*
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Kabushiki Kaisha Suwa Seikosha: *See—*
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Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
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Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
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Kaercher, Ralph William; and Peschke, John Ralph, to American Can Company. Plastic film for container end closure. 3,704,804, Cl. 220-53.000.

Kaeser, Ernst K.: *See—*
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Kahn, Lawrence F.: *See—*
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Kaiser, Andrew J.: *See—*
Stout, Thomas C.; and Kaiser, Andrew J., 3,705,022.

Kaiser, Carl; and Ross, Stephen T., to Smith Kline & French Laboratories. Hydroxyphenyl-2-piperidinylcarinols. 3,705,169, Cl. 260-293.840.

Kaiser, Frederick A., to Bendix Corporation, The. Fluidic deicer valve. 3,704,720, Cl. 137-81.500.

Kalachev, Vasily Alexeevich: *See—*
Kuznetsov, Lev Vasilievich; Slavinsky, Zunya Mikhalevich; Kalachev, Vasily Alexeevich; Krupin, Alexandr Leonidovich; Aristarkhov, Nikolai Alexandrovich; Popkov, Eduard Jurievich; Trutnev, Vladimir Alexandrovich; and Bulychev, Nikolai Petrovich, 3,704,496.

Kallianos, Andrew G.; Warfield, Albert H.; and Simpson, Melvyn I., to Liggett & Myers Incorporated. 2-Isopropyl-5-methyl-2-hexenal, 2-isopropyl-5-methylhexanal, 3-hydroxy-2-isopropyl-5-methylhexanal, and derivatives thereof as tobacco flavorants. 3,704,71, Cl. 131-17.00r.

Kalstein, Abraham G., to Aerovox Corporation. Electric capacitor unit. 3,705,336, Cl. 317-260.000.

Kamola, Roman C.; Vince, Michael A.; Gundlach, Robert W.; and Gunther, Kenneth W., to Xerox Corporation. Apparatus for developing latent electrostatic images. 3,704,524, Cl. 34-56.000.

Kaneko, Shin-Ichi; Takahashi, Kei; and Yamamoto, Hisao, to Sumitomo Chemical Company, Ltd. Novel thiazolylacetic acids and salts thereof. 3,705,153, Cl. 260-240.00d.

Kanting Oilfield Services Ltd.: *See—*
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Kaplan, Lloyd A.; and Oesterling, Robert E., to United States of America, Navy. Bis(2-fluoro-2,2-dinitroethyl) formal preparation. 3,705,197, Cl. 260-615.00a.

Kappes, Werner, to Krone GmbH. PCM decoder with expansion characteristic. 3,705,359, Cl. 329-104.000.

Kaswer, Joseph, Jr.: *See—*
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Katayama, Tadao: *See—*
Noyori, Yasuyuki; Uehira, Eiji; and Katayama, Tadao, 3,705,273.

Katchka, Jay R., to Robertshaw Controls Company. Flow control device with pressure regulation. 3,704,854, Cl. 251-61.200.

Katzman, Lawrence; and Briggin, Edward. Vaporizer bowl construction. 3,705,415, Cl. 219-271.000.

Kaufman, Warren F.: *See—*
Fix, John W.; Hallum, Charles E.; and Kaufman, Warren F., 3,704,832.

Kawaguchi, Nobuhisa, to Fuj Polymer Industries Co., Ltd. Room temperature vulcanizing composition. 3,705,120, Cl. 260-18.00s.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Okamoto, Hiroshi; and Okada, Kazuya, 3,704,500.

Kay, George; and Efimov, Alexander. Exercising machine with spring-return pedals and pull lines. 3,704,886, Cl. 272-73.000.

Kazbekov, Embek Nikolaevich: *See—*
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Kearney & Trecker Corporation: *See—*
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Keberle, Wolfgang: *See—*
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Keith, Carl D.: *See—*
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Keith, Carl D.; and Pfefferle, William C. Serial reforming with platinum-rhenium and platinum-non rhenium catalysts. 3,705,094, Cl. 208-65.000.

Keith, Carl D.; and Pfefferle, William C. Serial reforming with platinum-rhenium and platinum-non phenium catalysts. 3,705,994, Cl. 208-65.000.

Keller, Hans; and Sauer, Wolfgang, to ITT Industries, Inc. Astable multivibrator containing two complimentary transistors. 3,705,362, Cl. 331-111.000.

Kelly, Walter A. Submarine tanker. 3,704,678, Cl. 114-16.00r.

Kelp, Fritz, to Kraftwerk Union Aktiengesellschaft. Method for treating heat exchangers and similar apparatus in thermal power plants. 3,705,057, Cl. 148-6.350.

Kennametal Inc.: *See—*
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Kennecott Copper Corporation: *See—*
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Kennedy, George C., to Teledyne, Inc. Apparatus for manufacturing diamonds. 3,704,969, Cl. 425-77.000.

Kennedy, Paul G.; Zeigler, Rodney N.; and Provine, J., to Westinghouse Electric Corporation. Synchronization method and apparatus for disc recorders. 3,705,262, Cl. 178-6.6dd.

Kennedy, Robert Arthur. Tubular maze toys. 3,704,541, Cl. 46-26.000.

Kerr, Charles F., Jr., to Eltec, Inc. Single-pole double-break high-voltage switch assembly. 3,705,279, Cl. 200-48.00s.

Kerst, Al F., to Monsanto Company. Substituted ethane diphosphonic acids and salts and esters thereof. 3,705,191, Cl. 260-502.40p.

Keyser, Naaman H., to Interlake, Inc. Adjustable strip conditioner. 3,704,614, Cl. 72-165.000.

Kharitonov, Gennady Grigorievich; Nebytov, Anatoly Mitrofanovich; Doroshin, Sergei Mikhailovich; and Alimova, Mariana Sergeevna, to Vsesojuzny Nauchno-Issledovatelsky Institut po Stroitelstvu Magistralnykh Truboprovodov Okruzhnoi praezd. Plant for applyingsolidifying plastic masses. 3,704,865, Cl. 259-108.00a.

Kiefer, Michael Edward, to Triangle Environmental Corporation. Chamber and filament structure and method for flow through thermal conductivity micro size measuring chambers. 3,704,984, Cl. 73-27.00r.

Kilpatrick, Robert G.: *See—*
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Kim, Charles W., to Hercules Incorporated. Nonwoven fabric and process for preparing. 3,705,070, Cl. 161-58.000.

Kim, Don W.: *See—*
Dobo, Emerick J. Cary; Kim, Don W.; and Mallonee, William C., 3,705,068.

Kimberly-Clark Corporation: *See—*
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Stumpf, Robert J., 3,705,065.

Kinetic Science Corporation: *See—*
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King, Charles B.: *See—*
Kabana, Walter P.; and King, Charles B., 3,705,288.

King, Edwin B., to Southern California Chemical Co., Inc. Continuous redox process for dissolving copper. 3,705,061, Cl. 156-19.000.

King, Graham E.: *See—*
Miles, Leon H.; and King, Graham E., 3,704,750.

Kinjo, Kikuo; Yamanouchi, Teruo; Kondo, Eiichi; Matsuno, Hiroshi; and Nishide, Katsuhiko, to Canon Kabushiki Kaisha. Chlorine and bromine containing poly-9-vinylcarbazole electrophotographic polymers. 3,705,031, Cl. 96-1.500.

Kinkaid, Robert John; and Asick, John Carl, to AMP Incrrporated. Connector with releasable spring contact and releasing tool. 3,705,376, Cl. 339-30.000.

Kirchgessner, Henry J.: *See—*
Krzewinski, Robert J.; and Kirchgessner, Henry J., 3,704,994.

Kishino, Shigeo: *See—*
Schrader, Gerhard; Scheinpflug, Hans; Jung, Herbert F.; Kuyama, Shimpei; Kishino, Shigeo; and Yamada, Yasuo, 3,705,241.

Kishino, Shigeo; Kudamatsu, Akio; and Shiokawa, Kouzo, to Bayer Aktiengesellschaft. O-ethyl-S-propyl-S-phenyl-dithiophosphates. 3,705,218, Cl. 260-964.000.

Kitchener, Andrew Rajna, to Electrohome Limited. Bearing assembly for electric motors. 3,704,923, Cl. 308-132.000.

Klafter, Richard D.: *See—*
Herczfeld, Bonita Falkner; Herczfeld, Peter R.; and Klafter, Richard D., 3,704,706.

Klein, Gerhart P., to Mallory, P. R., & Co., Inc. Sintering furnace. 3,704,872, Cl. 263-3.000.

Kleineaschoff, Brunhilde: *See—*
Kleineaschoff, Josef; and Kleineaschoff, Brunhilde, 3,704,888.

Kleineaschoff, Josef; and Kleineaschoff, Brunhilde, to Getex Consult AG. Apparatus for orienting bowling pins and separating the ball and pins. 3,704,888, Cl. 273-43.00r.

Kleinschmidt, Hans-Joachim; and Schultenkampger, Josef, to Gelenkwellenbau GmbH. Intermediate bearing for supporting a divided line of drive shafts in a motor vehicle. 3,704,922, Cl. 308-26.000.

Klimstra, Paul D. 17-Oxygenated-1 alpha-methyl-2-methylen-5 alpha-androstan-3-ones and intermediates. 3,705,180, Cl. 260-397.300.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
May, Oswald, 3,704,909.

Kloosterziel, Heinz, to Eaton Yale & Towne GmbH. Locking arrangement for dead bolt latch locks, especially for hotel guest room doors. 3,704,608, Cl. 70-340.000.

KMS Industries, Inc.: *See—*
Thomas, Carlton E.; and Cochran, Gary D., 3,704,949.

Knapsack Aktiengesellschaft: *See—*
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Kneller, Klaus; Poncet-Montange, Daniel; Prost, Jean-Louis; and Trub, Jean, to Schweizerische Industrie-Gesellschaft. Self-regulating extruder. 3,704,972, Cl. 425-145.000.

Knoop, John F.: *See—*
Snead, William K.; and Knoop, John F., 3,705,008.

Knowles, Richard N., to Du Pont de Nemours, E. I., and Company. Flame resistant polymers containing amide complexes of metal salts. 3,705,128, Cl. 260-45.75r.

Kobayashi, Kazuhiko: *See—*
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Kobe Steel, Ltd.: *See—*
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Kobetz, Paul; Becker, Warren E.; and Giraitis, Albert P., to Ethyl Corporation. Metal plating process. 3,705,051, Cl. 117-47.00h.

Kobori, Toshio: *See—*
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Koch, Robert M.: *See—*
Johnson, Robert M.; Toby, Dennis E.; and Koch, Robert M., 3,704,661.

Kochi, Kiyoshi, to Iwatsu Electric Company Limited. Count display system. 3,705,296, Cl. 235-92.0ea.

Koegler, Ansel A., to Stromberg-Carlson Corporation. Apparatus for inserting small articles in a matrix plate. 3,704,504, Cl. 29-208.00r.

Koga, Motoyuki, to Hakko Co., Ltd. Method of fabricating structural block assemblies. 3,704,564, Cl. 52-747.000.

Kogyo Gijutsuin: *See—*
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Kok, Jurgen: *See—*
Kuehnle, Manfred R.; Kok, Jurgen; and Jochimsen, Dieter, 3,705,294.

Koller, Hans; and Frey-Portner, Urs., to Buss AG. Cleaning apparatus for the operation of filter equipment. 3,704,573, Cl. 55-268.000.

Kolomnikov, Igor Sergeevich: *See—*
Korshak, Vasily Vladimirovich; Volpin, Mark Efimovich; Sergeev, Vladimir Alexandrovich; Shitikov, Valentin Kuzmich; and Kolomnikov, Igor Sergeevich, 3,705,131.

Kolozsvari, Zoltan; and Gal, Endre, to Fabrica de Utilaje Si Piese de Schimb "Metalotehnico". Soft-nitriding procedure for steel and cast iron. 3,705,058, Cl. 148-16.600.

Komatsu, Hideo; Yuguchi, Sadao; Tanimura, Masamitsu; and Matsukawa, Hiroshi, to Toray Industries, Inc. Fiber forming polyester composition and fiber produced therefrom. 3,705,130, Cl. 260-47.00c.

Komesz, Zoltan: *See—*
Tuba, Zoltan; Bor, Maria, nee Szabo; Komesz, Zoltan; Weitner, Eva, nee Vari; and Gorog, Sandor, 3,705,150.

Komori, Shigehiro; Kurahashi, Akira; and Sato, Jiro, to Canon Kabushiki Kaisha Co., Ltd. Copying device having a slit-exposure system. 3,704,944, Cl. 355-8.000.

Kondo, Eiichi: *See—*
Kinjo, Kikuo; Yamanouchi, Teruo; Kondo, Eiichi; Matsuno, Hiroshi; and Nishide, Katsuhiko, 3,705,031.

Kondo, Iwao; Taoka, Kenjiro; and Sasgawa, Kenji. Electric discharge machining device. 3,705,286, Cl. 219-69.00c.

Kono, Kiichi: *See—*
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Kooy, Elmer D.; and Peterson, Donald L., to Pillsbury Company, The. Automated method for optimizing utilization of warehouse storage space. 3,705,410, Cl. 444-1.000.

Korshak, Vasily Vladimirovich; Volpin, Mark Efimovich; Sergeev, Vladimir Alexandrovich; Shitikov, Valentin Kuzmich; and Kolomnikov, Igor Sergeevich, to Ordena Lenina Institut Elementoorganicheskikhsoedineny Academii. Polymers of polyphenylene type and methd of producing the same. 3,705,131, Cl. 260-47.0ua.

Kostenbauer, Ronald F.; and Welch, James P., to Odetics, Inc. Digital format converter. 3,705,398, Cl. 340-347.0dd.

Kostur, Robert E., to Comet Industries, Inc. Molding machine. 3,704,974, Cl. 425-214.000.

Kosuge, Kuniko: *See—*
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Kotliar, Abraham M.: *See—*
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Kowalski, Conrad Edward: *See—*
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Kraftwerk Union Aktiengesellschaft: *See—*
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Krahl, Fritz; Hammel, Dieter; Heymer, Gero; and Harnisch, Heinz, to Knapsack Aktiengesellschaft. Process for the manufacture of alkali metal polyphosphates. 3,705,232, Cl. 423-312.000.

Krapu, John M. Wedging and prying tool. 3,704,860, Cl. 254-95.

Kratt, Henry J. Gun safety device. 3,704,536, Cl. 42-1.00r.

Kremer, Charles J.; Condo, Albert C.; and Brown, Donald S., to Atlantic Richfield Company. Wax compositions containing an organic acid and a polyvinyl alkyl ether. 3,705,121, Cl. 260-23.000.

Kremser, Gunter, to Siemens Aktiengesellschaft. Apparatus for saturating and hardening the stator winding rods of high voltage electric machines. 3,704,870, Cl. 263-2.00r.

Krieb, Karl Heinz; and Zimmermann, Firtz, to Steinkohlen-Elektrizitats Aktiengesellschaft. Control system for a gas-turbine installation. 3,704,587, Cl. 60-39.030.

Krimmel, Carl Peter, to Searle, G. D., & Co. Adamantan carboxamidoalkanoic acids and related compounds. 3,705,141, Cl. 260-112.500.

Krock, Alwin; Page, Hans-Peter; and Hirschmann, Joachim, to Licentia Patent-Verwaltungs G.m.b.H. Digital computer having a plurality of accumulator registers. 3,705,389, Cl. 340-172.500.

Krone, Ben W.; and Royer, Kenton D. Flexible sliding adapter for facsimile receiver stylus positioning. 3,705,408, Cl. 346-139.00c.

Krone GmbH: *See—*
Kappes, Werner, 3,705,359.

Krueger Metal Products, Inc.: *See—*
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Krumpholz, Oskar: *See—*
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Kuehnle, Manfred R.; Kok, Jurgen; and Jochimsen, Dieter, to Elliott Business Machines, Inc., mesne. Data card and method of encoding same. 3,705,294, Cl. 235-61.12n.

Kugler, Tibor, to Lonza, Ltd. Method for carrying out high temperature reactions. 3,705,006, Cl. 23-1.00r.

Kulig, Constantine W., to Emhart Corporation. Drive for a container processing machine. 3,704,623, Cl. 73-37.000.

Kun, Zoltan K., to Zenith Radio Corporation. Methods of producing p-typeness and p-n- junctions in wide band gap semiconductor materials. 3,705,059, Cl. 148-175.000.

Kupka, John J., to Vulcan Iron Works Inc. Free piston power fource. 3,704,651, Cl. 91-23.00r.

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Leyburn, Derek; and Davey, Murray Allan, to Bell Telephone Company of Canada, The. Telephone trunk testing system. 3,705,275, Cl. 179-175.300.
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Lloyd, Samuel H., to Santa Fe International Corporation. Column stabilized stinger transition segment and pipeline supporting apparatus. 3,704,596, Cl. 61-72.300.

Lochner, Herbert, to Cik-Chemische Industrie Kempen GmbH. Process for the manufacture of varicolored, ornamentally designed needled non-woven fabrics. 3,705,064, Cl. 156-72.000.

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Loren, Norman S.; and Porter, Theodore L., to Enterprise Machine Products Corporation. Reinforcement dispensing mechanism. 3,704,795, Cl. 214-8.50f.

Louderback, Allan L.; and Youhne, Young, to Baxter Laboratories, Inc. Calibrating fluid for automated hematology instruments. 3,705,110, Cl. 252-408.000.

lovely, John D., to Electrohome Limited. Networks for setting up and adjusting the colour temperature of the picture reproduced by the picture tube of a colour television receiver. 3,705,259, Cl. 178-5.40r.

Lowry, Randy W. Removable wear plate for fifth wheel. 3,704,924, Cl. 308-136.000.

Loyd, Calvin D.; Oberle, Theodore L.; and Satzler, Ronald L., to Caterpillar Tractor Company. Portable friction welding machine. 3,704,821, Cl. 228-2.000.

Lucas, Joseph, (Industries) Limited: *See*—
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Lydon, Lloyd E.; Steigleder, Charles J.; and Carpenter, Warren E., to Hughes Aircraft Company. Aircraft navigation system with vertical guidance. 3,705,306, Cl. 235-150.200.

Lynn, John R.; and Tate, George W., Jr., to United States of America, Health, Education and Welfare. Computer controlled method for automatic visual field examination. 3,705,003, Cl. 351-39.

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Majkrzak, Charles P.; and Polgar, Michael S., to International Telephone and Telegraph Corporation. Method of producing a nozzle for a turbogenerator. 3,704,499, Cl. 29-157.00c.

Malen, Charles; Danree, Bernard; and Laubie, Michel, to Science Union et Cie Societe Francaise de Recherche Medicale. Benzothiopyran compounds. 3,705,167, Cl. 260-293.570.

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Manoogian, Dickran, to Entwistle Company, The. Dual boxing coiler. 3,704,839, Cl. 242-80.000.

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Marand, Jean, to Ciba-Geigy Corporation. High pressure propellant dispensing valve. 3,704,725, Cl. 137-550.000.

Marand, Jean, to Ciba-Geigy Corporation. Multi-component dispenser and valve. 3,704,812, Cl. 222-136.000.

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Marino, Patrick John, to Bell Telephone Laboratories, Incorporated. Supervisory circuit for monitoring the formation and termination of interconnections in a time-division switch. 3,705,267, Cl. 179-15.840.

Marion, Charles P.; and Reynolds, Blake, to Texaco Development Corporation. Synthesis gas generation. 3,705,108, Cl. 252-373.000.

Marks, Walter R., to Rex Chainbelt, Inc. Adjustable phase two shaft vibrator. 3,704,631, Cl. 74-61.000.

Marmor, Ralph A.; and Brandberg, Lawrence C., to Pillsbury Company, The. Method and apparatus for measuring the peroxide content of fats. 3,705,012, Cl. 23-230.00r.

Marriott, James G., to Libbey-Owens-Ford Company. Method of repairing electrically conducting frit circuits. 3,705,047, Cl. 117-2.000.

Marsh, Robert E. Water softener deflector-distributor structure. 3,704,785, Cl. 210-285.000.

Marshall, David J.; and Givner, Morris L., to American Home Products Corporation. Antiandrogenic steroids. 3,705,179, Cl. 260-349.000.

Marten, John Anthony; and Gee, Bernard Arthur, to Suntester Limited. Vehicle testing apparatus and to safety devices therefore. 3,704,624, Cl. 73-117.000.

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Maruyama, Kunimori, to Oscar Kogyo Kabushiki Kaisha, mesne. Electropneumatic propelling system for vehicles. 3,704,760, Cl. 180-66.00b.

Marx, Paul: *See*—
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Marzocchi, Alfred; and Janetos, Nicholas S., to Owens-Corning Fiberglas Corporation. Glass fiber bundle comprising an elastomer compatible impregnant and a thickening agent. 3,705,073, Cl. 161-176.000.

Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Glass fiber reinforced elastomers. 3,705,075, Cl. 161-176.000.

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Massie, Stephen N., to Universal Oil Products Company. Alkylation of aromatics with alkyl halides. 3,705,201, Cl. 260-671.00c.

Massie, Stephen N., to Universal Oil Products Copany. Alkylation of aromatics with olefins. 3,705,202, Cl. 260-671.00c.

Mast, Rolf, to Armour-Dial, Inc. Composition and method of defoaming bubble baths. 3,705,102, Cl. 252-89.000.

Masuda, Mitsuru, to ISE Electronics Corporation. Fluorescent display tubes. 3,705,324, Cl. 313-109.500.

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Matlack, Albert S.; and Schwarz, Robert J., to Hercules Incorporated. Flame retardant polymeric compositions. 3,705,209, Cl. 260-861.000.

Matsui, Katsuaki; Kurumada, Tomoyuki; Watanabe, Ichiro; Ohta, Noriyuki; Murayama, Keisuke; and Morimura, Syoji, to Sankyo Company Limited. Stabilization of synthetic polymers. 3,705,126, Cl. 260-45.80n.
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May, Oswald, to Klockner-Humboldt-Deutz Aktiengesellschaft. Tractor. 3,704,909, Cl. 296-102.000.
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McColl, Bruce John, to Owens-Illinois, Inc. Debarking and debranching apparatus. 3,704,733, Cl. 144-2.00z.
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McKillip, William James: *See—*
Aelony, David; and McKillip, William James, 3,705,154.
McKinzie, Preston V., to Michaels of Oregon Co. Gun barrel mounting for sling swivel. 3,704,537, Cl. 42-85.000.
McMahon, Donald H., to Sperry Rand Corporation. Micro-holographic recording and reading apparatus. 3,704,930, Cl. 350-3.500.
McNamara, Robert A. Process and apparatus for producing improved photographic emulsion. 3,705,034, Cl. 96-94.000.
McNoldy, Larry Benjamin: *See—*
Hansen, Eric Lowell; McNoldy, Larry Benjamin; and Pohl, Karl-Heinz, 3,705,377.
McReynolds, James C.; and Adams, William E., to Bartlett-Collins Company. Glassware dimpling. 3,705,026, Cl. 65-232.000.
Mead Corporation, The: *See—*
Elrod, Ernest; and Viescas, Arthur B., 3,705,069.
Mechanical Technology Incorporated: *See—*
Pan, Coda Hoong-Tao, 3,704,920.
Medical Development Corporation: *See—*
Holbrook, Legrand K.; and Ostler, David S., 3,704,724.
Medidyne Corporation: *See—*
Giesy, Jerry D.; Smith, Gordon E.; and Schneider, Jack M., 3,704,712.
Meier, Otto H., to General Electric Company. Ammunition flow path fire propagation prevention system. 3,704,772, Cl. 198-1.000.
Melzer, Arnfried: *See—*
Vetter, Hans; Danhauser, Justus; Kabitzke, Karlheinz; Marx, Paul; Melzer, Arnfried; Pelz, Willibald; and Puschel, Walter, 3,705,035.
Memorex Corporation: *See—*
Brown, Keith S., 3,704,841.
Mentschel, Hellmut; and Henkel, Jahs-Joachim, to Siemens Aktiengesellschaft. Valve-controlled differential pump system and method of operation. 3,704,965, Cl. 417-395.000.
Merck & Co., Inc.: *See—*
Fisher, Michael H.; Hoff, Dale R.; and Bochis, Richard J., 3,705,174.
Meredith, Edwin L., Sr. Safety belt buckle construction. 3,704,492, Cl. 24-223.000.
Merz & Co., Chemische Fabrik: *See—*
Scherm, Arthur; and Peteri, Dezso, 3,705,194.
Mesiah, Raymond N.; Beck, William F.; and Goldstein, David, to FMC Corporation. Agglomeration of cyanuric acid. 3,705,019, Cl. 23-313.000.
Messer Griesheim GmbH: *See—*
Borner, Fritz, 3,704,901.
Messerschmitt-Bolkow-Blohm: *See—*
Bastian, Ingbert; and Brogl, Horst, 3,705,299.
Metallgesellschaft Aktiengesellschaft: *See—*
Schmalfeld, Paul; and Hahn, Helmut, 3,705,086.
Metro Data Corporation: *See—*
Dalke, James A., 3,705,342.
Metzger, Louis G., to JFD Electronics Corporation. Low height ceramic capacitor for printed circuit board mounting. 3,705,335, Cl. 317-249.00d.
Mevenkamp, Paul, to Friedrich Uhde GmbH. High pressure heat exchanger for ammonia gas synthesis plants. 3,704,690, Cl. 122-7.00r.
Meyer, Ernst; Grimm, Wolfgang Erlenbach; Gerlach, Klaus; and Linhart, Helmut, to Akzona Incorporated. Apparatus for mixing a pigment dispersion into polyamide melt. 3,704,863, Cl. 259-8.000.
Meyer, Leonard S., to Sybron Corporation, mesne. Fiber reinforced resin grating. 3,704,561, Cl. 52-180.000.
Meyers, Benjamin F.; and Oldis, John E., Jr., to Western Electric Company, Incorporated. Apparatus for fluidically controlling the assembly and dynamic resistance adjustment of acoustic resistors. 3,704,502, Cl. 29-203.00r.
Michaels of Oregon Co.: *See—*
McKinzie, Preston V., 3,704,537.
Microdisplay Systems, Inc.: *See—*
Miles, John R., 3,704,998.
Mikus, Daniel J.: *See—*
Wheaton, Theodore C., III.; and Mikus, Daniel J., 3,704,723.
Milakovich, Joseph. Knockdown chair. 3,704,911, Cl. 297-440.000.
Miles, John R., to Microdisplay Systems, Inc. Wide angle compact projection lens assembly. 3,704,998, Cl. 350-216.000.
Miles, Leon H.; and King, Graham E., to Atlantic Richfield Company. Process for inhibiting scale formation in oil well brines. 3,704,750, Cl. 166-279.000.
Miller, Alfred H., to Esso Research and Engineering Company. 1-Thiadiazolyl-hexahydro-1,3,5-triazine-2-ones. 3,705,155, Cl. 260-248.0ns.
Miller, Gerald G.: *See—*
Zickefoose, Rox L.; Miller, Gerald G.; and Judge, James R., 3,704,621.
Millett, Ray C., to Marina Industries, Inc. Precision disk grinder. 3,704,555, Cl. 51-132.000.
Millmaster Onyx Corporation: *See—*
Adams, Phillip; and Petrocci, Alfonso N., 3,705,027.
Mills, John S.: *See—*
Edwards, John A.; Fried, John H.; and Mills, John S., 3,705,182.
Mills, Norman T.: *See—*
Halley, James W.; Grimes, Donald E.; Mills, Norman T.; and Yalamanchili, Krishna Rao, 3,704,744.
Mills, Stephen H.: *See—*
Chai, Hi D.; Mills, Stephen H.; Pawletko, Joseph P.; Peters, Francis E.; and Young, Carl T., 3,705,370.
Milprint, Inc.: *See—*
Weber, Raymond B., 3,704,533.
Minbiole, Louis J., Jr.: *See—*
Neumann, John W.; Clark, Chester G.; and Minbiole, Louis J., Jr., 3,704,685.
Minks, Floyd m. Electrical terminal structure. 3,705,258, Cl. 174-153.00r.
Minnesota Mining and Manufacturing Company: *See—*
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Rosvold, Donald M., 3,705,072.
Minolta Camera Kabushiki Kaisha: *See—*
Tsujimoto, Kayoshi; Kuramoto, Yoshio; and Kobori, Toshio, 3,705,338.
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Eickenhorst, Frank C., 3,704,775.
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Mitsubishi Denki Kabushiki Kaisha: *See—*
Saito, Nagao; Kobayashi, Kazuhiko; and Takagi, Shigeru, 3,705,287.
Mitsuhashi, Masakazu; Hirao, Mamoru; and Sugimoto, Kaname, to Hayashibara Company. Low calorie sweetener mixture of maltitol and maltotriitol. 3,705,039, Cl. 99-28.000.
Mitsui Mining & Smelting Co., Ltd.: *See—*
Kuwahara, Kenshi; Sonoda, Shigetada; and Ishii, Masahito, 3,705,137.
Mizuguchi, Shunji: *See—*
Okamoto, Miyoshi; Mizuguchi, Shunji; and Watanabe, Koji, 3,705,226.
Mizuno, Sueo: *See—*
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Mogensen, Arne: *See—*

Jedvall, Gustaf I., 3,705,346.

Mohawk Industrial Laboratories, Inc.: *See—*
Lanahan, John H.; and Abraham, William W., 3,704,781.

Mohr, Bruno R. Device for hanging Christmas tree decorations. 3,704,487, Cl. 24-73.0cp.

Molins Machine Company Limited: *See—*
John, Ronald, 3,704,959.

Moller, Jens L., to Continental Can Company, Inc. Method for making and applying a bottle cap. 3,704,677, Cl. 113-121.00a.

Monaco, Gaetano, to Steel Company of Canada Limited, The. Drive system for strip material. 3,704,993, Cl. 242-75.530.

Monsanto Company: *See—*
Dobo, Emerick J. Cary; Kim, Don W.; and Mallonee, William C., 3,705,068.
Kerst, Al F., 3,705,191.
Reynolds, John H., 3,705,084.
Terpstra, Marrine A., 3,705,198.
Wolfinger, Mark Dennis, 3,705,135.

Montagu, Roland P., to Olympic Overseas, Inc. Helicopter with rotor having metal ring for flywheel effect. 3,704,540, Cl. 46-75.000.

Mooi, John: *See—*
Dalson, Milton H.; Keith, Carl D.; Mooi, John; and Pfefferle, William C., 3,705,095.

Moore, Earl Phillip, Jr.: *See—*
Bunger, Fred Lee; and Moore, Earl Phillip, Jr., 3,705,183.

Moore, George Edward, Jr.: *See—*
Moore, George Edward, Sr.; and Moore, George Edward, Jr., 3,704,902.

Moore, George Edward, Sr.; and Moore, George Edward, Jr. Collapsible link. 3,704,902, Cl. 287-64.000.

Moore, George G. I.; and Conway, Alvin C., to Minnesota Mining and Manufacturing Company. N-aroyl sulfonamides. 3,705,185, Cl. 260-465.00d.

Moore, John Russell Crompton. Suspension systems. 3,704,740, Cl. 152-75.000.

Moore Products Co.: *See—*
Packel, Morton A., 3,705,425.

Morand, Gilles; and Giraudon, Marc. Hair-slide. 3,704,717, Cl. 132-46.00a.

Moravick, Donald W.; and Levy, Leon M. Jigsaw puzzle. 3,704,892, Cl. 273-157.00r.

Morden, Russell L.; and Perkins, Ralph W., to General Motors Corporation. Torque responsive transmission mechanism. 3,704,637, Cl. 74-751.000.

Morena, John J.: *See—*
Grauso, Robert N.; and Morena, John J., 3,704,645.

Morgan, Andrew, 50% to Leyva, Manuel M., Jr. Power sander attachment. 3,704,559, Cl. 51-382.000.

Morimura, Syoji: *See—*
Matsui, Katsuaki; Kurumada, Tomoyuki; Watanabe, Ichiro; Ohta, Noriyuki; Murayama, Keisuke; and Morimura, Syoji, 3,705,126.
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Morita, Koji: *See—*
Okada, Hisao; and Morita, Koji, 3,705,363.

Morita, Schichiro, to Sasebo Heavy Industries, Co., Ltd. Apparatus for automatically cutting and removing coil band. 3,704,613, Cl. 72-131.000.

Morris, Carlton M., Jr. Handtruck hoist. 3,704,799, Cl. 214-370.000.

Morse, Charles Ernest: *See—*
Audesirk, John Pringle; Morse, Charles Ernest; and Weed, Gordon Douglas, 3,705,269.

Moser, Vincent J.: *See—*
Emmons, William D.; Moser, Vincent J.; Brodnyan, John G.; and Shachat, Norman, 3,705,053.

Mosher, Douglas E.; Treat, Carleton H.; and Drab, Edwin H., to USM Corporation. Continuous mixer. 3,704,866, Cl. 259-192.000.

Moss, James R., to Nortron, Inc. Printing unit. 3,704,667, Cl. 101-93.00c.

Motorola, Inc.: *See—*
Huber, William B., 3,705,270.

Moulton Irrigation Company: *See—*
Moulton, Thomas S., 3,704,827.

Moulton, Thomas S., to Moulton Irrigation Company. Self propelled irrigation system. 3,704,827, Cl. 239-177.000.

Mounter, Anthony Edmund: *See—*
Reeves, Alec Harley; Ramsay, Melvin Murray; Mounter, Anthony Edmund; and Laurence, Simon French, 3,705,307.

Mourey, Jean-Jacques; and Badertscher, Ernest, to Societe d'Assistance Technique pour Produits Nestle S.A. Production of casein by passage through a duct with a constriction. 3,705,143, Cl. 260-120.000.

Mueckter, Heinrich: *See—*
Graudums, Ivars; Mueckter, Heinrich; and Frankus, Ernst, 3,705,162.

Mueller, Charles L., to TRW Inc. Automatic grinding machine. 3,704,551, Cl. 51-5.000.

Mueller, Rolf K., to Bendix Corporation, The. Method and apparatus for providing an enhanced image of an object. 3,704,931, Cl. 350-3.500.

Mukai, Junji: *See—*
Nakamuta, Masaji; Tsukui, Michio; Mukai, Junji; Narahara, Toshikazu; and Noguchi, Sumio, 3,705,208.

Mulford, Jack A.: *See—*
Jachimek, Thomas P.; and Mulford, Jack A., 3,705,423.

Muller-Lindemann, Dieter: *See—*
Arens, Egidius; Muller-Lindemann, Dieter; and Triebold, Karl-Friedrich, 3,705,334.

Munchbach, Curt, to Ungerer, Trma. Sheet and strip flattening machine. 3,704,615, Cl. 72-165.000.

Mundy, Joseph L., to General Electric Company. Content addressed memory cell with selective bit writing. 3,705,390, Cl. 340-173.0am.

Munsingwear, Inc.: *See—*
Hopper, Lois H., 3,704,713.

Muralidhara, Ranya: *See—*
Pittet, Alan O.; Muralidhara, Ranya; and Theimer, Ernst T., 3,705,158.

Murata Machinery, Ltd.: *See—*
Sakai, Shozi, 3,704,810.

Murayama, Keisuke: *See—*
Matsui, Katsuaki; Kurumada, Tomoyuki; Watanabe, Ichiro; Ohta, Noriyuki; Murayama, Keisuke; and Morimura, Syoji, 3,705,126.

Murayama, Keisuke; and Morimura, Syoji, to Sankyo Company Limited. Acrylic acid derivatives of 2,2,6, 6-tetramethylpiperidines. 3,705,166, Cl. 260-293.860.

Muroi, Tadashi; Sato, Mikio; and Ogata, Masatzugu, to Hitachi Ltd. and Hitachi Chemical Co., Ltd. Epoxy resin composition containing metallocenes. 3,705,129, Cl. 260-47.0ec.

Muse, Kenneth K. Taco shell jig. 3,705,042, Cl. 99-426.000.

Muth, Karl: *See—*
Weber, Helmut; Aumuller, Walter; Weyer, Rudi; Muth, Karl; and Stach, Kurt, 3,705,151.

Muzyczko, Haddeus M.; Shore, Samuel; and Martin, Jerome A., to Richardson Company, The. Non-oxidizing acidic compositions containing resin amine and acetylenic corrosion inhibitors. 3,705,106, Cl. 252-148.000.

Myers, John A. Method for making lengths of rope. 3,704,578, Cl. 57-1.00r.

N L Industries, Inc.: *See—*
Estes, James D.; and De Gough, Kirby, 3,704,749.
Weeks, Wyatt J., 3,704,962.

Nachtman, Elliot S., to La Salle Steel Company. Metals having improved machinability and method. 3,705,020, Cl. 29-182.800.

Nadolski, Francis Joseph, to American Cyanamid Company. Ink marking compositions. 3,705,045, Cl. 106-22.000.

Nagaki, Takehiro; and Yamamoto, Teruo, to Sony Corporation. Drive mechanism for use with information cards. 3,705,396, Cl. 340-174.10c.

Nagano, Akira: *See—*
Hatano, Isao; Nagano, Akira; and Yosimoto, Kenzi, 3,705,298.

Nagayama, Masuzo: *See—*
Yamane, Izumi; Nagayama, Masuzo; and Takai, Makoto, 3,705,139.

Nagayama, Masuzo; and Okada, Hiroshi, to Lion Fat and Oil Co., Ltd. Method of preparing light-colored olefin sulfonate. 3,705,192, Cl. 260-513.00r.

Nakamura, Isao; and Matsuzaki, Hiroshi, to Tokyo Shibaura Electric Co., Ltd. Duplex interphone. 3,705,412, Cl. 179-37.000.

Nakamuta, Masaji; Tsukui, Michio; Mukai, Junji; Narahara, Toshikazu; and Noguchi, Sumio, to Hitachi, Ltd. and Hitachi Chemical Co., Ltd. Polyester resin and method of manufacturing same. 3,705,208, Cl. 260-861.000.

Nakayama, Kiyoshi, to Kyowa Hakko Kogyo Co., Ltd. Method for producing nicotinamide adenine dinucleotide. 3,705,080, Cl. 195-28.00n.

Nakayama, Kiyoshi, to Kyowa Hakko Kogyo Co., Ltd. Method for producing nicotinamide adenine dinucleotide. 3,705,081, Cl. 195-28.00n.

Nakazawa, Shozo; and Ikeda, Osamu, to Daiichi Seiyaku Co., Ltd. Antibacterial composition. 3,705,243, Cl. 424-250.000.

Narahara, Toshikazu: *See—*
Nakamuta, Masaji; Tsukui, Michio; Mukai, Junji; Narahara, Toshikazu; and Noguchi, Sumio, 3,705,208.

Naruse, Oyhsuke; Ashiya, Ryosuke; Nii, Takehiko; and Fuse, Yuzo, to Sony Corporation. Shadow mask having apertures at intersections of barrel-shaped horizontal and pin cushion-shaped vertical lines. 3,705,322, Cl. 313-85.00s.

Naskar, Sasanka Sekhar; Hulsmann, Hans-Leo; and Renckhoff, Gustav, to Chemische Werke Witten GmbH. Process for the preparation of diphenyl terephthalate. 3,705,186, Cl. 260-475.0pn.

National Distillers and Chemical Corporation: *See—*
Horvitz, David; and Baugh, William D., 3,705,163.

National Research Development Corporation: *See—*
Jones, Clive Lynn, 3,705,290.

National Steel Construction Co.: *See—*
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National Steel Corporation: *See—*
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Nebytov, Anatoly Mitrofanovich: *See—*
Kharitonov, Gennady Grigorievich; Nebytov, Anatoly Mitrofanovich; Doroshin, Sergei Mikhailovich; and Alimova, Mariana Sergeevna, 3,704,865.

Nedreski, Robert Joseph, to General Electric Company. Speed adjusting system for grinding wheel drives and the like. 3,704,556, Cl. 51-134.50r.

Neeff, Rutger: *See—*
Peters, Karl-Heinz; and Neeff, Rutger, 3,705,178.

Neergaard, Ejler Baastrup, to Niels Erik Guldbaek Kaiser. Optical signal averaging apparatus. 3,704,939, Cl. 350-321.000.

Neff, Harry F.; and Sabo, Stephen C., to Goodrich, B. F., Company, The. Method of making a jack. 3,705,224, Cl. 264-96.000.

Neff, Ray A.; and Gowings, Dan D., to Visu-Phonics, Incorporated. Aircraft proximity device. 3,705,405, Cl. 343-112.0ca.

Nelson, Robert D., to Burroughs Corporation. Method for mounting connectors on printed circuit boards. 3,704,515, Cl. 29-626.000.

Neumann, John W.; Clark, Chester G.; and Minbiole, Louis J., Jr., to Oxy Metal Finishing Corporation, mesne. Processing apparatus. 3,704,685, Cl. 118-6.000.

Neuro-Data, Inc.: *See—*
John, Erwin Roy, 3,705,297.

Nicholds, Kenneth Edmund, to Hymatic Engineering Company Limited. Cooling apparatus. 3,704,597, Cl. 62-222.000.

Nicholson, Denzel Allan, to Procter and Gamble Company, The. Methylenediphosphonate esters. 3,705,219, Cl. 260-932.000.

Nicol, Edward A.; and Frederick, Harold M., to Burroughs Corporation. Sheet stacking device. 3,704,793, Cl. 214-7.000.

Nicolay, Karl; and Pollmeier, Konrad, to Durkoppwerke GmbH. Stacking device for flexible workpieces. 3,704,884, Cl. 271-85.000.

Nicolson, Garth Fancher; and Wiims, Carl Alfred, to Jackson, Byron, Inc. Power pipe tong with torque responsive brake means. 3,704,638, Cl. 81-57.180.

Nieboer, Pieter Hendrik, to DEMAG Aktiengesellschaft. Charging apparatus construction for a blast furnace. 3,704,992, Cl. 214-37.000.

Niedrach, Leonard W.; and Grubb, Willard T., to General Electric Company. Carbon dioxide sensor. 3,705,088, Cl. 204-195.00p.

Niels Erik Guldbaek Kaiser: *See—*
Neergaard, Ejler Baastrup, 3,704,939.

Nienart, Louis F., to Allied Chemical Corporation. Novel hot-pressed refractory articles and preparation thereof. 3,705,112, Cl. 252-520.000.

Nigg, Paul, to Ego Werke AG. Food service tray with cutlery. 3,704,779, Cl. 206-47.00r.

Nihon Tokushu Noyaku Seizo Kabushiki Kaisha: *See—*
Schrader, Gerhard; Scheinpflug, Hans; Jung, Herbert F.; Kuyama, Shimpei; Kishino, Shigeo; and Yamada, Yasuo, 3,705,241.

Nii, Takehiko: *See—*
Naruse, Oyhsuke; Ashiya, Ryosuke; Nii, Takehiko; and Fuse, Yuzo, 3,705,322.

Nilsson, Harry; and Larsson, Gunnar. Apparatus for disintegration and separation of soil and similar materials. 3,704,834, Cl. 241-79.200.

Nippon Carbon Company Limited: *See—*
Ishikawa, Toshikatsu; and Teranishi, Haruo, 3,705,236.

Nippon Electric Company, Limited: *See—*
Sakaguchi, Mitsuhito; and Nishida, Nobuo, 3,704,929.

Nippon Gakki seizo Kabushiki Kaisha: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Oil Company, Limited: *See—*
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Nippondenso Kabushiki Kaisha: *See—*
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Nishida, Nobuo: *See—*
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Nishide, Katsuhiko: *See—*
Kinjo, Kikuo; Yamanouchi, Teruo; Kondo, Eiichi; Matsuno, Hiroshi; and Nishide, Katsuhiko, 3,705,031.

Nishikawa, Eikichi, to Kyoritsu Manufacturing Company Limited. Electric vise. 3,704,879, Cl. 269-222.000.

Nishimoto, Tetsunori, to Kogyo Gijutsuin. Memory control system which enables access requests during block transfer. 3,705,388, Cl. 340-172.500.

Nishino, Tadashi: *See—*
Hinohara, Kango; Nishino, Tadashi; and Harada, Hiroshi, 3,704,825.

Nissan Motor Company, Limited: *See—*
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Noda, Etsunosuke: *See—*
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Noel, Eugene M.: *See—*
Noel, Eugene M.; and Connelly, Frank (said Connelly assor. to said), 3,704,735.

Noel, Eugene M.; and Connelly, Frank, said Connelly assor. to said Noel, Eugene M. Automatic splitting machine for hand-opened muffins. 3,704,735, Cl. 83-2.000.

Noguchi, Sumio: *See—*
Nakamuta, Masaji; Tsukui, Michio; Mukai, Junji; Narahara, Toshikazu; and Noguchi, Sumio, 3,705,208.

Nohmura, Ryotaro. Fish farming nest. 3,704,687, Cl. 119-3.000.

Nomura, Hirokazu, to Nippon Kokan Kabushiki Kaisha. Apparatus for forming T-welds between mutually perpendicular plates. 3,704,822, Cl. 228-25.000.

North American Rockwell Corporation: *See—*
Prem, Lawrence L., 3,705,317.

Northern Illinois Gas Company: *See—*
Batz, James E., 3,705,385.

Norton, Orien K. Seal for disposable media filter apparatus. 3,704,787, Cl. 210-387.000.

Nortron, Inc.: *See—*
Moss, James R., 3,704,667.

Nosch, Edwin: *See—*
Arndt, Heinz-Herbert; and Nosch, Edwin, 3,704,987.

Novak, Michael A.: *See—*
Beno, Emil V.; and Novak, Michael A., 3,704,470.

Noy, Jack M., to Kennecott Copper Corporation. Process for extracting molybdenum and rhenium from raw materials containing same. 3,705,230, Cl. 23-15.00w.

Noyori, Yasuyuki; Uehira, Eiji; and Katayama, Tadao, to Fujitsu Limited. Magnetic recording and reproducing apparatus. 3,705,273, Cl. 179-100.20z.

Nozaki, Choji: *See—*
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Nunes, John; Geary, Arthur L.; and Roberts, John A. Means and method of energy storage and damping. 3,704,877, Cl. 267-166.000.

Oberle, Theodore L.: *See—*
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Odetics, Inc.: *See—*
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Oesterling, Robert E.: *See—*
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Oetzel, George N., to Standard Research Institute. Generation of high-power high-frequency radio impulses. 3,705,354, Cl. 325-106.000.

Ogata, Masatzugu: *See—*
Muroi, Tadashi; Sato, Mikio; and Ogata, Masatzugu, 3,705,129.

Ogiso, Mitsutoshi; and Yamada, Katsuhiko, to Canon Kabushiki Kaisha. Exposure detector device and a camera system with the exposure detector device. 3,704,656, Cl. 95-42.000.

Ohga, Shizuo; Yasutomi, Hideatsu; and Fujita, Masuo. 2,2'-Dichlorodiisopropyl ether as a nematocide. 3,705,252, Cl. 424-342.000.

Ohi, Reiichi: *See—*
Amano, Hiroyuki; Ohi, Reiichi; and Shirasu, Kazuo, 3,705,036.

Ohsawa, Mitsuo, to Sony Corporation. Transistor circuit performing gating operation. 3,705,313, Cl. 307-239.000.

Ohta, Noriyuki: *See—*
Matsui, Katsuaki; Kurumada, Tomoyuki; Watanabe, Ichiro; Ohta, Noriyuki; Murayama, Keisuke; and Morimura, Syoji, 3,705,126.

Okada, Hiroshi: *See—*
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Okada, Hisao; and Morita, Koji, to Sony Corporation. Control signal generator with selectively switchable duration control circuit. 3,705,363, Cl. 331-174.000.

Okada, Kazuya: *See—*
Okamoto, Hiroshi; and Okada, Kazuya, 3,704,500.

Okada, Takashi, to Sony Corporation. Video signal control circuit for color television. 3,705,260, Cl. 178-5.40r.

Okamoto, Hiroshi; and Okada, Kazuya, to Kawasaki Jukogyo Kabushiki Kaisha. Method of correcting a number of revolution of a screw propeller. 3,704,500, Cl. 29-401.000.

Okamoto, Miyoshi; Mizuguchi, Shunji; and Watanabe, Koji, to Toray Industries, Inc. Artificial leather and a method of manufacturing the same. 3,705,226, Cl. 264-162.000.

Oldis, John E., Jr.: *See—*
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Olin Corporation: *See—*
Fister, Julius C., Jr., 3,705,023.

Oliver, Robert E.: *See—*
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Omron Tateisi Electronics Co.: *See—*
Hatano, Isao; Nagano, Akira; and Yosimoto, Kenzi, 3,705,298.

Ono, Teizo. Large diameter pipe cutting device. 3,704,516, Cl. 30-96.000.

Opti-Holding: *See—*
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Opti-Holding AG: *See—*
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OPTOmechanisms, Inc.: *See—*
Brault, Andre R.; Chitayat, Anwar K.; and Beeh, Ronald C. M. (said Beech assor. to), 3,704,946.

Ord, Michael. Airplane hijacking prevention system. 3,704,845, Cl. 244-121.000.

Ordena Lenina Institut Elementoorganicheskikhsoedineny Academii: *See—*
Korshak, Vasily Vladimirovich; Volpin, Mark Efimovich; Sergeev, Vladimir Alexandrovich; Shitikov, Valentin Kuzmich; and Kolomnikov, Igor Sergeevich, 3,705,131.

Orinik, Michael T.: *See—*
Abolafia, Oscar R.; Butora, John A.; and Orinik, Michael T., 3,705,118.

Orosz, Joseph. Revolving stroke drive. 3,704,632, Cl. 74-127.000.

Orr, LaVern G.; and Yutani, Nobuo, to Boeing Company, The. Electromagnetic high energy forming. 3,704,506, Cl. 29-243.540.

Oscar Kogyo Kabushiki Kaisha, mesne: *See—*
Maruyama, Kunimori, 3,704,760.

Ostby & Barton Co.: *See—*
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Osteng, Tor: *See—*
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Ostler, David S.: *See—*
Holbrook, Legrand K.; and Ostler, David S., 3,704,724.

Oswald, Hendrikus J.: *See—*

Lamb, George E. R.; Prevorsek, Dusan C.; Kotliar, Abraham M.; and Oswald, Hendrikus J., 3,705,074.
Otto, C., Dr., & Comp. G.m.b.H.: *See—*
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Owens-Corning Fiberglas Corporation: *See—*
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Oxy Metal Finishing Corporation, mesne: *See—*
Neumann, John W.; Clark, Chester G.; and Minbiole, Louis J., Jr., 3,704,685.
Packel, Morton A., to Moore Products Co. Strip chart recorder. 3,705,425, Cl. 346-72.000.
Page, Hans-Peter: *See—*
Krock, Alwin; Page, Hans-Peter; and Hirschmann, Joachim, 3,705,389.
Painaud, Jean, to Tritton Enterprises Ltd. Seal. 3,704,647, Cl. 85-55.000.
Palencher, Jacques; and Penard, Michel, to Societe dite: Lebacey Industrie. Moving frame measuring device. 3,705,351, Cl. 324-151.00r.
Pallos, Laszlo: *See—*
Magdanyi, Laszlo; Gelleri, Andras; Pallos, Laszlo; Erdelyi, Lujza, nee Petocz; and Gorog, Peter, 3,705,175.
Palmer, Fred Irwin; and Fogleboch, John Richard, to RCA Corporation. Wide dynamic range product detector. 3,705,355, Cl. 325-450.000.
Pan, Coda Hoong-Tao, to Mechanical Technology Incorporated. Combination clamping and bearing system. 3,704,920, Cl. 308-9.000.
Panhard, Jean, to Societe de Construction Mecaniques Pamhard & Levassor. Post-combustion devices for internal combustion engines. 3,704,592, Cl. 60-290.000.
Pannier, Karl A., Jr.: *See—*
Sorenson, James L.; Reynolds, Gordon S.; and Pannier, Karl A., Jr., 3,704,709.
Papaioannou, Christos George, to American Cyanamid Company. Preparation of 2-substituted-5-amino or substituted amino 1,3,4-thiadiazoles. 3,705,171, Cl. 260-306.80d.
Paramonoff, Elpidifor, to Standum, Inc. Redraw blankholder positioning mechanism for cup-shaped article formers such as metallic can body formers and the like. 3,704,619, Cl. 72-349.000.
Parikh, Jekishan R.; and Breuer, Max E., to Upjohn Company, The. Method for the preparation of 6-methyl-3-oxo-delta 4,6-steroids. 3,705,181, Cl. 260-397.400.
Park, Sang C. Catheter. 3,704,711, Cl. 128-305.000.
Parks, Howard L., to Bunker-Ramo Corporation, The. Electrical circuit packaging structure and method of fabrication thereof. 3,705,332, Cl. 317-101.0cm.
Parr, Leslie R.: *See—*
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Bernier, Robert N.; Blackmer, Dwight; and Paulsen, Paul L., 3,704,838.
Paulson, Carl G., to Hayes, C. I., Inc. Apparatus for heat treating metallic articles. 3,704,871, Cl. 263-2.00r.
Pawletko, Joseph P.: *See—*
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Pearson, Alan; and Marhanka, John E., to Aluminum Company of America. Producing sintered alumina fibers from an alumina slip of very high solids content. 3,705,223, Cl. 264-56.000.
Peil, William; Daino, Peter R.; and Sauter, Lon J., to General Electric Company. Push-button switch assembly. 3,705,367, Cl. 335-186.000.
Pelluet, Jacques Guy, to Societe Anonyme: Les Produits Organiques du Santerre Orsan. Method for extracting and separating enzymes. 3,705,085, Cl. 195-66.00r.
Pelz, Willibald: *See—*
Vetter, Hans; Danhauser, Justus; Kabitzke, Karlheinz; Marx, Paul; Melzer, Arnfried; Pelz, Willibald; and Puschel, Walter, 3,705,035.
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Palencher, Jacques; and Penard, Michel, 3,705,351.
Pennwalt Corporation: *See—*
Waltrich, Paul Francis, 3,704,875.
Penton, Hugh V.; and Dunphy, Gerald P., to California Metal Enameling Company. Sign construction including novel section assemblies and section joinders. 3,704,535, Cl. 40-125.00k.
Peonski, Edward, to American Gage & Machine Company. Machine tool and gaging apparatus. 3,704,557, Cl. 51-165.750.
Perkin-Elmer Corporation, The: *See—*
Staunton, John J. J., 3,705,048.
Perkins, Ralph W.: *See—*
Morden, Russell L.; and Perkins, Ralph W., 3,704,637.
Perreault, Jules, to Bombardier Limited. Endless track. 3,704,918, Cl. 305-38.000.
Peschke, John Ralph: *See—*
Kaercher, Ralph William; and Peschke, John Ralph, 3,704,804.
Peteri, Dezso: *See—*
Scherm, Arthur; and Peteri, Dezso, 3,705,194.
Peters, Francis E.: *See—*
Chai, Hi D.; Mills, Stephen H.; Pawletko, Joseph P.; Peters, Francis E.; and Young, Carl T., 3,705,370.
Peters, Karl-Heinz; and Neeff, Rutger, to Farbenfabriken Bayer Aktiengesellschaft. 1,5-Bis-(2-nitro-anilino)-anthraquinone. 3,705,178, Cl. 260-378.000.
Petersen, Ross. Tablet press. 3,704,976, Cl. 425-352.000.
Peterson, Donald L.: *See—*
Kooy, Elmer D.; and Peterson, Donald L., 3,705,410.
Petkov, Milko Ivanov: *See—*
Vitkov, Eil Slavchev; Petkov, Milko Ivanov; and Atanassov, Gueorgui Stoylov, 3,704,759.
Petree, Harris E., to Ciba-Geigy Corporation. Suppression of tris(alkylamino)-s-triazine formation in the production of chloro-bis (alkylamino)-s-triazines through the addition of formaldehyde. 3,705,156, Cl. 260-249.800.
Petri, Eckart: *See—*
Studer, Hans-Luzius; Petri, Eckart; Wurmstedt, Karl; and Haas, Jan Tomas, 3,704,828.
Petrocci, Alfonso N.: *See—*
Adams, Phillip; and Petrocci, Alfonso N., 3,705,027.
Petroff, Robert J. Cam operated drill unit. 3,704,957, Cl. 408-129.000.
Petty Geophysical Engineering Company: *See—*
Quay, Roy G., 3,705,382.
Pfefferle, William C.: *See—*
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Keith, Carl D.; and Pfefferle, William C., 3,705,094.
Keith, Carl D.; and Pfefferle, William C., 3,705,994.
Pfeiffer, Francis R.; and Weisbach, Jerry A., to Smith Kline & French Laboratories. Adamantoyl and adamantyl (alkyl) glycerophosphoryl (and phosphonyl) ethanolamines. 3,705,213, Cl. 260-945.000.
Pfiffner, Albert: *See—*
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; and Schwieter, Ulrich, 3,705,187.
Phelps, Dolphus H., to General Electric Company. Hermetic refrigeration compressor. 3,704,964, Cl. 417-312.000.
Philco-Ford Corporation: *See—*
Fix, John W.; Hallum, Charles E.; and Kaufman, Warren F., 3,704,832.
Savey, Lenfred L., 3,705,422.
Philip, Alexander Schroder, to Plessey Handel und Investments A.G. Telephone switching systems. 3,705,266, Cl. 179-15.0at.
Philippaerts, Herman Adelbert; Ghys, Theofiel Hubert; and Depoorter, Henri, to Gevaert-Agfa N.V. Spectral sensitization of silver halide Lippman emulsions. 3,705,038, Cl. 96-140.000.
Phys-Chemical Research Corporation: *See—*
Hershler, Abe, 3,705,375.
Piacentino, Thomas J., to Longwood Development Corporation. Apparatus for working the compost of mushroom beds. 3,704,752, Cl. 172-116.000.
Piccitto, Francesco. Pedal operated water sport vehicle. 3,704,682, Cl. 115-26.300.
Pickett, Charles G.; and Chadha, Desh D., to Bio-Medical Sciences, Inc. Temperature indicator. 3,704,985, Cl. 73-356.000.
Piech, Ferdinand V., to Porsche, Dr.-Ing. H.c.F., K.G., Firma. Combined crankshaft for multi-cylinder piston engines, especially internal combustion engines. 3,704,636, Cl. 74-597.000.
Pillsbury Company, The: *See—*
Kooy, Elmer D.; and Peterson, Donald L., 3,705,410.
Marmor, Ralph A.; and Brandberg, Lawrence C., 3,705,012.
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Pioneer Industries, Division of SOS Consolidated, Inc.: *See—*
Hansen, Robert A.; and Jerchower, Lewis A., 3,704,547.
Pipkin, Edward L., to United States of America, Navy. Resonant target sonar system. 3,705,381, Cl. 340-3.00r.
Pipkins, David D., to Valspar Corporation, The. Method for manufacturing paints and inks, and product produced thereby. 3,705,044, Cl. 106-20.000.
Pitney-Bowes, Inc.: *See—*
Saint Onge, Ronald J.; and Sherman, Charles I., 3,704,668.
Schrempp, Ernst; and Beck, Christian A., 3,704,686.
Zucker, Fredric E.; Kaswer, Joseph, Jr.; and Wilczynski, Thomas S., 3,704,890.
Pitt, Richard E., to Owens-Corning Fiberglas Corporation. Method and apparatus for reducing torque changes in rock shafts. 3,704,878, Cl. 267-182.000.
Pittet, Alan O.; Muralidhara, Ranya; and Theimer, Ernst T., to International Flavors & Fragrances, Inc. Bicyclic dehydropiperazine compositions. 3,705,158, Cl. 260-250.00r.
Pitzalis, Mario: *See—*
Vargiu, Silvio; Pitzalis, Mario; and Abruzzi, Pierluigi, 3,705,116.
Vargiu, Silvio; Pitzalis, Mario; and Abruzzi, Pierluigi, 3,705,117.
Plachenov, Tikhon Grigorievich; Belotserkovsky, Grigory Markovich; Dolgova, Ekaterina Nikolaevna; Ezhov, Jury Valentinovich; Fogel, Vladimir Alexandrovich; Benediktov, Andrei Pavlovich; and Avilov, Iliya Yakovlevich, to Leningradsky Tekhnologichesky Imeni ensoveta. Dehumidifying composition and a method for preparing the same. 3,704,806, Cl. 220-64.000.
Plaskolite, Inc.: *See—*
Lee, Jimmy D., 3,705,221.
Plastetics, Inc.: *See—*
Bellasalma, Gerald J., 3,704,675.

Plemmons, Jerry R.; and Raymond, Mark H., to General Electric Company. Luminaire. 3,705,300, Cl. 240-25.000.

Plempel, Manfred: *See—*
Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, 3,705,172.

Plessey Handel und Investments A.G.: *See—*
Philip, Alexander Schroder, 3,705,266.

Plummer, William T., to Polaroid Corporation. Method and apparatus for fabricating imaging means. 3,704,617, Cl. 72-311.000.

Pohl, Karl-Heinz: *See—*
Hansen, Eric Lowell; McNoldy, Larry Benjamin; and Pohl, Karl-Heinz, 3,705,377.

Pohr, Jack. Fly gun. 3,704,981, Cl. 43-135.000.

Polaroid Corporation: *See—*
Goulston, Arthur B.; and Huyffer, Paul S., 3,705,184.
Plummer, William T., 3,704,617.

Polgar, Michael S.: *See—*
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Pollmeier, Konrad: *See—*
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Poncet-Montange, Daniel: *See—*
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Ponder, Charles L. Nursing bottle. 3,704,803, Cl. 215-11.00a.

Popkov, Eduard Jurievich: *See—*
Kuznetsov, Lev Vasilievich; Slavinsky, Zunya Mikhalevich; Kalachev, Vasily Alexeevich; Krupin, Alexandr Leonidovich; Aristarkhov, Nikolai Alexandrovich; Popkov, Eduard Jurievich; Trutnev, Vladimir Alexandrovich; and Bulychev, Nikolai Petrovich, 3,704,496.

Porsche, Dr.-Ing. H.c.F., K.G., Firma: *See—*
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Port Autonome de Dunkerque: *See—*
De Demandolx Dedons, Pierre; Giroud, Gerard; and Delaunay, Daniel, 3,704,796.

Porter, Theodore L.: *See—*
Loren, Norman S.; and Porter, Theodore L., 3,704,795.

Poss, Emilio, to TIMI S.p.A. Device for positioning workpieces in a pre-established sequence of machining positions. 3,704,956, Cl. 408-91.000.

PPG Industries, Inc.: *See—*
Snead, William K.; and Knoop, John F., 3,705,008.

Prast, Gijsbert; and Hargreaves, Clifford McDonald, to U.S. Phillips Corporation. Cryogenic refrigerator. 3,704,600, Cl. 62-457.000.

Pratley, Clifford, to Hobart Manufacturing Company, The. Food slicing machines. 3,704,736, Cl. 146-102.00c.

Predicted Environments, Inc.: *See—*
McIntosh, Robert H.; and Hull, Ezekiel H., 3,705,235.

Prem, Lawrence L., to North American Rockwell Corporation. Energy conversion system utilizing exothermic reactions. 3,705,317, Cl. 310-11.000.

Premyslovsky, Jiri: *See—*
Bayer, Oldrich; Snasel, Josef; Premyslovsky, Jiri; and Smalcl, Frantisek, 3,704,654.

Preston, Jerome A.; and Davis, Carlton J., Sr., to Owens-Corning Fiberglas Corporation. Material for bonding resins to glass fibers and composites made therefrom. 3,705,125, Cl. 260-37.00n.

Preu, Hans L., to American Hoist and Derrick Company. Articulated linkage connection for an excavating machine. 3,704,534, Cl. 37-83.000.

Prevorsek, Dusan C.: *See—*
Lamb, George E. R.; Prevorsek, Dusan C.; Kotliar, Abraham M.; and Oswald, Hendrikus J., 3,705,074.

Price, David D., Jr.: *See—*
De Bell, Lawrence R.; and Price, David D., Jr., 3,705,271.

Priestley, Ronald. Gas/liquid film contact apparatus. 3,704,869, Cl. 261-112.000.

Procter and Gamble Company, The: *See—*
Nicholson, Denzel Allan, 3,705,219.

Prost, Jean-Louis: *See—*
Kneller, Klaus; Poncet-Montange, Daniel; Prost, Jean-Louis; and Trub, Jean, 3,704,972.

Provine, J.: *See—*
Kennedy, Paul G.; Zeigler, Rodney N.; and Provine, J., 3,705,262.

Prud'Hon, Lucien: *See—*
Bono, David; and Prud'Hon, Lucien, 3,705,015.

Pursley, William C.: *See—*
Franklin, John S.; and Pursley, William C., 3,705,301.

Puschel, Walter: *See—*
Vetter, Hans; Danhauser, Justus; Kabitzke, Karlheinz; Marx, Paul; Melzer, Arnfried; Pelz, Willibald; and Puschel, Walter, 3,705,035.

Quay, Roy G., to Petty Geophysical Engineering Company. Methods for improved deconvolution of seismic or similar data. 3,705,382, Cl. 340-15.5rr.

Quick, Graeme R., to Iowa State University Research Foundation. Fruit and vegetable harvesting device. 3,704,576, Cl. 56-330.000.

Rabiger, Wolfgang, to Grundig, E.M.V. Process for controlling and regulating piston-driven engines with hydrostatic motion transducers. 3,704,585, Cl. 60-1.000.

Rabow, Gerald, to International Telephone and Telegraph Corporation. Frequency modulation demodulation system. 3,705,360, Cl. 329-110.000.

Raciunas, Kazys. Skiing teaching device. 3,704,885, Cl. 272-57.00b.

Ramsay, Melvin Murray: *See—*
Reeves, Alec Harley; Ramsay, Melvin Murray; Mounter, Anthony Edmund; and Laurence, Simon French, 3,705,307.

Ramsey, David A.: *See—*
Galetto, Louis V.; and Ramsey, David A., 3,705,333.

Randall, David I.: *See—*
Vogel, Calvin; and Randall, David I., 3,705,215.

Randoing, Jean-Martial, to Centre National d'Etudes Spaliales. Apparatus for the treatment of information signals. 3,705,353, Cl. 325-42.000.

Ranz, Erwin; Weyde, Edith; and Von Rintelen, Harald, to Agfa-Gevaert Aktiengesellschaft. Process for the production of photographic images. 3,705,033, Cl. 96-29.00r.

Raphaelian, Leo A.: *See—*
Taber, David; and Raphaelian, Leo A., 3,705,104.

Raschdorf, Richard. Garment bag. 3,704,778, Cl. 206-7.000.

Ratliff, Goerge D., Jr., to United States Steel Corporation. Support assembly. 3,704,560, Cl. 52-122.000.

Raymond, Mark H.: *See—*
Plemmons, Jerry R.; and Raymond, Mark H., 3,705,300.

Raynor, Russell C.: *See—*
Jablon, Theodore M.; and Raynor, Russell C., 3,704,789.

Raytheon Company: *See—*
Hapgood, William H., 3,704,748.

Razdan, Raj K.; and Johnson, Fatima N., to Little, Arthur D., Inc., mesne. 5-Hydroxy-4-(4-phenyl-1-piperazinyl-hydrobenz [c,d] indoles. 3,705,161, Cl. 260-268.0tr.

RCA Corporation: *See—*
Gorkiewicz, Walter Joseph; and Van Raalte, John A., 3,704,936.
Palmer, Fred Irwin; and Fogleboch, John Richard, 3,705,355.
Shidlovsky, Igal, 3,705,323.

Reber, Walter, to Societe dite: Societe Kuhn Freres & Cie. Societe en Commandite Simple. Mechanism for regulating tool-carrier arms on spinner-type agricultural machines. 3,704,577, Cl. 56-370.000.

Redelman, Paul E., to Interlake Steel Corporation. Hydraulic load carrier. 3,704,800, Cl. 214-730.000.

Reehil, Edward G.: *See—*
Gueldenpfennig, Klaus; Reehil, Edward G.; and Tryon, Lansing E., 3,705,386.

Rees, Peter Leon: *See—*
Renfrew, Robert Morrison; and Rees, Peter Leon, 3,704,973.

Reeves, Alec Harley; Ramsay, Melvin Murray; Mounter, Anthony Edmund; and Laurence, Simon French, to International Standard Electric Corporation. Optical repeater with phase error correction. 3,705,307, Cl. 250-199.000.

Reeves, John F., to Litewate Transport Equipment Corporation. Apparatus for reinforced plastic molding. 3,704,970, Cl. 425-128.000.

Regel, Erik K.: *See—*
Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, 3,705,172.

Regie Nationale des Usines Renault: *See—*
Remaud, Jacques, 3,704,895.

Reible, Robert H.: *See—*
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Reichhold-Albert-Chemie Aktiengesellschaft: *See—*
Broecker, Bernhard, 3,705,206.

Reimann, Hubertus, to VEB Pentacon Dresen Kamera- und Kinwerke. Micro-film camera. 3,704,947, Cl. 355-68.000.

Reimers Getriebe A.G.: *See—*
Schrodt, Rudolf, 3,704,634.

Remaud, Jacques, to Regie Nationale des Usines Renault and Automobiles Peugeot. Trim-correcting devices for vehicles. 3,704,895, Cl. 280-124.00f.

Renckhoff, Gustav: *See—*
Naskar, Sasanka Sekhar; Hulsmann, Hans-Leo; and Renckhoff, Gustav, 3,705,186.

Renfrew, Robert Morrison; and Rees, Peter Leon, to Husky Manufacturing & Toolworks, Ltd. Electro-hydraulic means for opening and closing injection molds. 3,704,973, Cl. 425-150.000.

Resch, Richard J.: *See—*
Hendrickson, Philip J.; and Resch, Richard J., 3,704,850.

Research Engineering Company: *See—*
Sheesley, John M.; and Gulick, Ronald A., 3,704,986.

Restivo, Frank S., to Westinghouse Electric Corporation. Testing system for motor driven apparatus. 3,705,352, Cl. 324-158.0mg.

Rev Master Industries, Inc.: *See—*
Krzewinski, Robert J.; and Kirchgessner, Henry J., 3,704,994.

Rex Chainbelt Inc.: *See—*
Buelow, William H., 3,704,896.
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Reynolds, Blake: *See—*
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Reynolds, Gordon S.: *See—*
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Reynolds, John H., to Monsanto Company. Macroporous enzyme reactor. 3,705,084, Cl. 195-63.000.

Reynolds Metals Company: *See—*
Cvacho, Daniel S.; and Lee, Harry W., Jr., 3,704,618.

Rhoades, John M., to General Electric Company. Automatic tool setting sensor. 3,704,641, Cl. 82-14.00r.

Rhoades, John M.; and Cooper, Carroll C., to General Electric Company. Automatic servo motor control for lathes providing SFM and chip thickness control. 3,705,339, Cl. 318-571.000.

Richardson Company, The: *See—*
Muzyczko, Haddeus M.; Shore, Samuel; and Martin, Jerome A., 3,705,106.

Richter Gedeon Vegyeszeti Gyar R.T.: *See—*
Tuba, Zoltan; Bor, Maria, nee Szabo; Komesz, Zoltan; Weitner, Eva, nee Vari; and Gorog, Sandor, 3,705,150.

Richter, Johan C. F. C., to Aktiebolaget Kamyr Karlstad. Cellulose bleaching plant. 3,704,603, Cl. 68-18.00f.

Rieke, James K.: *See—*
Walles, Wilhelm E.; McIntire, Otis R.; Rieke, James K.; and Griggs, Max V., 3,705,041.

Rigassi, Norbert: *See—*
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; and Schwieter, Ulrich, 3,705,187.

Rigopulos, Peter N.: *See—*
Blatt, William F.; Agranat, Edward A.; and Rigopulos, Peter N., 3,705,100.

Ringland, William L.; and Kaeser, Ernst K. Three phase rotary inductor vector adder. 3,705,343, Cl. 323-48.000.

Risany, Joseph J.: *See—*
Urbutis, Algimantas P.; Schenk, Bernard H.; Risany, Joseph J.; and Marbach, Walter V., 3,704,483.

Rittenhouse, Larry E., to International Business Machines Corporation. Scan converter multiplexing system. 3,705,263, Cl. 178-6.800.

Rizzone, Michael L., to United States Steel Corporation. Piston rod joint. 3,704,904, Cl. 287-125.000.

Robert, Alexandre: *See—*
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Roberts, John A.: *See—*
Nunes, John; Geary, Arthur L.; and Roberts, John A., 3,704,877.

Roberts, Maurice, to Lucas, Joseph, (Industries) Limited. Method of interconnecting parts. 3,705,380, Cl. 339-218.00r.

Robertshaw Controls Company: *See—*
Katchka, Jay R., 3,704,854.

Robins, Morris J.; and Currie, Bruce L., to University of Utah. 3-Deazapyrimidine nucleosides and method of preparation thereof. 3,705,147, Cl. 260-211.500.

Rock, Salvatore J. Necktie rack. 3,704,790, Cl. 211-13.000.

Roder, Rolf: *See—*
Huther, Gerhard; Roder, Rolf; and Schmidt, Ulrich, 3,704,954.

Rogers, Frederic L.; and Rogers, William W.; deceased (by Rogers, Sarah M.; executrix). Method of casting foam plastic to join a rigid shell and thin polymeric skin. 3,705,222, Cl. 264-45. 000.

Rogers, Sarah M.: *See—*
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Rogers, William W.: *See—*
Rogers, Frederic L.; and Rogers, William W., 3,705,222.

Rohm and Haas Company: *See—*
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Emmons, William D.; Moser, Vincent J.; Brodnyan, John G.; and Shachat, Norman, 3,705,053.
Emmons, William D.; and Levy, Jerome F., 3,705,189.
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Rohr, Otto: *See—*
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Rolin, Kenneth C., Sr.: *See—*
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Rolland Albert, S.A.: *See—*
Grandpierre, Robert; and Robert, Alexandre, 3,705,237.

Ronkes, Carel H.: *See—*
Carter, Dale K.; and Ronkes, Carel H., 3,704,953.

Rosenberg, Otto, to Agfa-Gevaert Aktiengesellschaft. Electronic flash circuit for photography. 3,705,330, Cl. 315-149.000.

Rosenblatt, Leonard; Horn, Chris C.; and Gallo, Mario S., to Globe Illumination Company. Spring latch structure. 3,704,905, Cl. 292-175.000.

Rosencranz, Robert, to Sargent-Welch Scientific Company. Electrical system for use in optical densitometry. 3,704,950, Cl. 356-73.000.

Ross, Stephen T.: *See—*
Kaiser, Carl; and Ross, Stephen T., 3,705,169.

Rossman, John Guise, Jr.: *See—*
Fintel, William Achard; Heighton, Harold Hubbard; and Rossman, John Guise, Jr., 3,705,227.

Rosvold, Donald M., to Minnesota Mining and Manufacturing Company. Underpacking for printing with dimensionally stable plastic core having elastomeric and pressure sensitive outer layers. 3,705,072, Cl. 161-167.000.

Rouse, John E.: *See—*
Hughes, Robert L.; and Rouse, John E., 3,704,692.

Royer, Kenton D.: *See—*
Krone, Ben W.; and Royer, Kenton D., 3,705,408.

Rube, Helmut, to Bosch, Robert Elektronik Und Photokino GmbH. Slide projector for use with straight and circular slide trays. 3,704,943, Cl. 353-117.000.

Ruckle, Robert A.: *See—*
Blubaugh, Robert L.; Ruckle, Robert A.; and Watts, Hubert J., 3,704,522.

Rudd, Kenneth Norman. Hooks and eyes. 3,704,489, Cl. 24-122.300.

Rudel, Kurt, to Gerdts, Gustav F., KG. Safety device for valves of tank wagon bottoms. 3,704,718, Cl. 137-39.000.

Ruegg, Rudolf: *See—*
Bohni, Erika; Ruegg, Rudolf; and Ryser, Gottlieb, 3,705,249.

Rufenacht, Kurt: *See—*
Bohner, Beat; and Rufenacht, Kurt, 3,705,240.

Rundt, John W., to Timken Company, The. Method of welding bearing components. 3,704,498, Cl. 29-148.40a.

Ruscitti, Tomaso, to Coster Tecnologie Speciali S.p.A. Valve for dispensing two distinct liquids from an aerosol container. 3,704,814, Cl. 222-145.000.

Russek, Simon E., Jr. Filler tube locking device. 3,704,606, Cl. 70-164.000.

Russell, William G., to Electrohome Limited. AFT system for signal receiver of type having tuner employing varactor diode. 3,705,356, Cl. 325-465.000.

Ryser, Gottlieb: *See—*
Bohni, Erika; Ruegg, Rudolf; and Ryser, Gottlieb, 3,705,249.

Sabo, Stephen C.: *See—*
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Sacks, George E.: *See—*
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Safir, Sidney Robert: *See—*
Wiegand, Gretchen Ellen; Bauer, Victor John; and Safir, Sidney Robert, 3,705,157.

Saint Onge, Ronald J.; and Sherman, Charles I., to Pitney-Bowes, Inc. Document imprinter for credit cards or the like. 3,704,668, Cl. 101-269.000.

Saito, Nagao; Kobayashi, Kazuhiko; and Takagi, Shigeru, to Mitsubishi Denki Kabushiki Kaisha. Process for shaping workpiece by electrical discharge and apparatus thereof. 3,705,287, Cl. 219-69.00p.

Sakaguchi, Mitsuhito; and Nishida, Nobuo, to Nippon Electric Company, Limited. Large capacity associative memory employing holography. 3,704,929, Cl. 350-3.500.

Sakai, Shozi, to Murata Machinery, Ltd. Automatic cop feeder. 3,704,810, Cl. 221-236.000.

Sandoz Ltd.; a/k/a Sandoz AG: *See—*
Schneider, Rupert, 3,705,159.

Sankyo Company Limited: *See—*
Matsui, Katsuaki; Kurumada, Tomoyuki; Watanabe, Ichiro; Ohta, Noriyuki; Murayama, Keisuke; and Morimura, Syoji, 3,705,126.
Murayama, Keisuke; and Morimura, Syoji, 3,705,166.

Sankyo Keiryoki Kabushiki Kaisha: *See—*
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Santa Fe International Corporation: *See—*
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Santho, Albert T. Cargo securing apparatus and methods. 3,704,672, Cl. 105-369.00a.

Sarem, Amir M.; and Holm, Leroy W., to Union Oil Company of California. Process for recovering oil from heterogeneous reservoirs. 3,704,990, Cl. 166-273.000.

Sargent & Company: *See—*
Allen, Irving, 3,704,620.

Sargent-Welch Scientific Company: *See—*
Rosencranz, Robert, 3,704,950.

Sarkozi, Miklos: *See—*
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Sarofeen, George M. J., to Coburn Manufacturing Co. Lens block. 3,704,558, Cl. 51-216.01p.

Sarto, Jorma O.; and Dawson, Gary D., to Chrysler Corporation. Notched door valve for control carburetor air and crankcase vapors. 3,704,698, Cl. 123-119.00b.

Sasebo Heavy Industries, Co., Ltd.: *See—*
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Sasgawa, Kenji: *See—*
Kondo, Iwao; Taoka, Kenjiro; and Sasgawa, Kenji, 3,705,286.

Sato, Jiro: *See—*
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Sato, Mikio: *See—*
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Satzler, Ronald L.: *See—*
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Sauer, Wolfgang: *See—*
Keller, Hans; and Sauer, Wolfgang, 3,705,362.

Saunders, Leonard M., to United States Steel Corporation. Method of making sound large generally cylindrical ingots. 3,704,745, Cl. 164-126.000.

Sauter, Lon J.: *See—*
Peil, William; Daino, Peter R.; and Sauter, Lon J., 3,705,367.

Savey, Lenfred L., to Philco-Ford Corporation. Panel room status indicator system and room uni therefor. 3,705,422, Cl. 340-286.00r.

Sayer, William H., Jr., to Varian Associates. Microwave applicator employing a broadside slot radiator. 3,705,283, Cl. 219-10.550.

Sayers, Howard A.: *See—*
Gourdine, Meredith C.; and Sayers, Howard A., 3,704,572.

Scheinpflug, Hans: *See—*
Schrader, Gerhard; Scheinpflug, Hans; Jung, Herbert F.; Kuyama, Shimpei; Kishino, Shigeo; and Yamada, Yasuo, 3,705,241.

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Urbutis, Algimantas P.; Schenk, Bernard H.; Risany, Joseph J.; and Marbach, Walter V., 3,704,483.

Scherm, Arthur; and Peteri, Dezso, to Merz & Co., Chemische Fabrik. Aminoadamantane derivatives and method for their production. 3,705,194, Cl. 260-561.00a.

Schick, Dieter, to Leitz, Ernst, G.m.b.H. Stereomicroscope. 3,704,932, Cl. 350-35.000.

Schmaldienst, Peter: *See—*
Struber, Gunter; and Schmaldienst, Peter, 3,704,701.

Schmalfeld, Paul; and Hahn, Helmut, to Metallgesellschaft Aktiengesellschaft. Coal carbonizing in trickling streams. 3,705,086, Cl. 201-34.000.

Schmidt, Kenneth J., to General Trailer Co., Inc. Vehicle axle suspension. 3,704,898, Cl. 280-124.00r.

Schmidt, Ulrich: *See—*
Huther, Gerhard; Roder, Rolf; and Schmidt, Ulrich, 3,704,954.

Schmit, Francis M.: *See—*
Aagard, Roger L.; and Schmit, Francis M., 3,705,395.

Schmitt, Fred A., to Litton Business Systems, Inc. Support. 3,704,847, Cl. 248-127.000.

Schmitz, Ambrose J.; McCarty, William R.; and Erickson, Howard L., to Eaton Corporation. Fluid control system. 3,704,721, Cl. 137-102.000.

Schneider, Jack M.: *See—*
Giesy, Jerry D.; Smith, Gordon E.; and Schneider, Jack M., 3,704,712.

Schneider, Rupert, to Sandoz Ltd.; a/k/a Sandoz AG. Herbicidal 2,4-di(substituted) amino-6-chloro pyrimidines. 3,705,159, Cl. 260-256.40n.

Schofield, Arthur T., to Manufacturers Brush Company, The. Method and apparatus for anchoring bristle bundles in a brush block. 3,704,915, Cl. 300-21.000.

Schrader, Gerhard; Scheinpflug, Hans; Jung, Herbert F.; Kuyama, Shimpei; Kishino, Shigeo; and Yamada, Yasuo, to Nihon Tokushu Noyaku Seizo Kabushiki Kaisha. Fungicidal process employing organic phosphorous acid esters. 3,705,241, Cl. 424-223.000.

Schrader, Robert W.: *See—*
Dotson, Billy R.; Schrader, Robert W.; Twomey, Marilyn A.; and Williams, Robert F., Jr., 3,705,148.

Schreiber, Manfred, to Maschinenfabrik Schweiter AG. Conditioning apparatus for yarn or thread. 3,704,494, Cl. 28-59.000.

Schrempp, Ernst; and Beck, Christian A., to Pitney-Bowes, Inc. Toner pump. 3,704,686, Cl. 118-429.000.

Schrodt, Rudolf, to Reimers Getriebe A.G. Infinitely variable cone pulley transmission. 3,704,634, Cl. 74-230.17f.

Schubeck, Joseph J., to Lakewood Industries, Inc. Traction device. 3,704,876, Cl. 267-66.000.

Schultenkampger, Josef: *See—*
Kleinschmidt, Hans-Joachim; and Schultenkampger, Josef, 3,704,922.

Schultz, Robert S. Child resistant safety cap closure assembly for a container. 3,704,802, Cl. 215-9.000.

Schuster, Donald E. Bolster hoist for a dump vehicle. 3,704,913, Cl. 298-22.00j.

Schwartz, Jerome, to Taylor Lock Company. Door chain lock. 3,704,908, Cl. 292-264.000.

Schwarz, Robert J.: *See—*
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Schweizerische Industrie-Gesellschaft: *See—*
Kneller, Klaus; Poncet-Montange, Daniel; Prost, Jean-Louis; and Trub, Jean, 3,704,972.

Schwendeman, Wayne C., Jr. Key actuated switch. 3,705,369, Cl. 335-206.000.

Schwieter, Ulrich: *See—*
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Chodnekar, Madjukar Subraya; Thommen, Hans; and Schwieter, Ulrich, 3,705,177.

Science Union et Cie Societe Francaise de Recherche Medicale: *See—*
Malen, Charles; Danree, Bernard; and Laubie, Michel, 3,705,167.

Scott, Allan W. Microwave generator with interleaved focusing and interaction structures. 3,705,327, Cl. 315-3.500.

Scott, Douglas R. Pneumatically actuated timer programming cam mechanism and switch. 3,705,278, Cl. 200-33.00b.

Scott, Eugene W., to Westinghouse Electric Corporation. Reversible wall box for recessed water cooler. 3,704,925, Cl. 312-228.900.

Scott, Francis A. Electrical alarm system. 3,705,401, Cl. 340-412.000.

Seals, Calvin L. Nature art wood grain painting kit. 3,704,531, Cl. 35-26.000.

Searle, G. D., & Co.: *See—*
Krimmel, Carl Peter, 3,705,141.

Sedgwick, Robert K.; Behrendt, Werner K.; and Baechle, Hans J., to Kearney & Trecker Corporation. Machine tool with tool changer. 3,704,510, Cl. 29-568.000.

Sedley, Bruce S., to Geer Hydraulics, Inc. Multi-code, tamper proof, card-operable magnetic locking mechanism. 3,705,277, Cl. 200-45.000.

Seeburg Corporation of Delaware, The: *See—*
Jachimek, Thomas P.; and Mulford, Jack A., 3,705,423.

Seeter, Richard E., Jr.; and Hodgson, George T., Jr., to Chomerics, Inc. Keyboard switch assembly with conductive plastic contactor and actuator spring sleeve biasing means. 3,705,276, Cl. 200-5.00a.

Segawa, Humio: *See—*
Seto, Hiroshi; Ueda, Mituko; and Segawa, Humio, 3,704,625.

Selby, Richard N.; and Williams, Donald M., to Du Pont de Nemours, E. I., and Company. Water-based enamel formulations from acrylic hydrosols. 3,705,124, Cl. 260-29.6ta.

Semenova, Ljubov Mikhailovna: *See—*
Arkhangelsky, Lev Arkadievich; and Semenova, Ljubov Mikhailovna, 3,704,521.

Senkewich, Alexander Martin. Automobile cigarette case with an automatic electrical lighter. 3,705,414, Cl. 219-262.000.

Sennefelder, Anton: *See—*
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Sergeev, Vladimir Alexandrovich: *See—*
Korshak, Vasily Vladimirovich; Volpin, Mark Efimovich; Sergeev, Vladimir Alexandrovich; Shitikov, Valentin Kuzmich; and Kolomnikov, Igor Sergeevich, 3,705,131.

Sessions, Donald W. Hulls in water craft. 3,704,473, Cl. 9-2.00s.

Sessler, Gerhard Martin; and West, James Edward, to Bell Telephone Laboratories, Incorporated. Preparation of electret transducer elements by application of controlled breakdown electric field. 3,705,312, Cl. 307-88.0et.

Seto, Hiroshi; Ueda, Mituko; and Segawa, Humio, to Sankyo Keiryoki Kabushiki Kaisha. Thermometer using liquid crystal compositions. 3,704,625, Cl. 73-356.000.

Shachat, Norman: *See—*
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Shannon, Hugh F.: *See—*
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Sharman, Samuel H., to Chevron Research Company. Hydrogenated olefin sulfonate-alkyl-1,2-glycol detergent compositions. 3,705,113, Cl. 252-555.000.

Sheafe, Edward A., III. Beverage container having integral formed lip guard. 3,704,805, Cl. 220-54.000.

Sheesley, John M.; and Gulick, Ronald A., to Research Engineering Company. Actuator. 3,704,986, Cl. 92-138.000.

Shell Oil Company: *See—*
Engel, Robert F., 3,704,567.

Shepherd, John Alexander; and Hobbs, Millice Floyd, to FMC Corporation. Sewage treatment with hydrogen peroxide. 3,705,098, Cl. 210-63.000.

Sherman, Charles I.: *See—*
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Shidlovsky, Igal, to RCA Corporation. Cathodochromic sodalite and cathode ray tube employing same. 3,705,323, Cl. 313-91.000.

Shinohara, Yoshimi. Regulating pulp concentration in paper manufacturing. 3,705,078, Cl. 162-198.000.

Shiokawa, Kouzo: *See—*
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Shirasu, Kazuo: *See—*
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Shitikov, Valentin Kuzmich: *See—*
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Shore, Samuel: *See—*
Muzyczko, Haddeus M.; Shore, Samuel; and Martin, Jerome A., 3,705,106.

Shull, Robert W.; and Thompson, Ronald, to General Housewares Corporation. Egg cooker. 3,704,663, Cl. 99-347.000.

Siegel, Arthur R., to International Business Machines Corporation. Unitary electro-optic array device making process. 3,704,512, Cl. 29-572.000.

Siegler, Edouard Horace, Jr., to Cary Instruments. Radiation entrapping, multi-reflection Raman sample cell employing a single concave mirror. 3,704,955, Cl. 356-244.000.

Siemens Aktiengesellschaft: *See—*
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Fork, Kurt; and Fork, Werner, 3,704,961.
Kremser, Gunter, 3,704,870.
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Siempelkamp, G., & Co.: *See—*
Don, Gunter, 3,704,883.

Siiberg, Hemming G., to Wagner Electric Corporation. Voltage and load independent flasher unit. 3,705,318, Cl. 307-132.00t.

Sills, Stanley Albert, to Imperial Chemical Industries Limited. Molten adhesives containing polymide and polyvinyl alcohol. 3,705,207, Cl. 260-857.000.

Simpson, Melvyn I.: *See—*
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Sims, Dewey M., Jr.: *See—*
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Singer, Malcolm Scott, to Chevron Research Company. Naphthyl-N-cyanoformyl carbamates. 3,705,188, Cl. 260-479.00c.

Sironi, Virginio, to Vibratechniques S.A. Vibrator. 3,704,862, Cl. 259-1.00r.

Skarivrda, Edwin Larry, to AMF Incorporated. Time switch with indexing means for programming. 3,704,629, Cl. 74-3.520.

Skytta, Osmo. Bearing box support for the shaft of a drying cylinder in a paper machine. 3,704,921, Cl. 308-22.000.

Slavinsky, Zunya Mikhalevich: *See—*
Kuznetsov, Lev Vasilievich; Slavinsky, Zunya Mikhalevich; Kalachev, Vasily Alexeevich; Krupin, Alexandr Leonidovich; Aristarkhov, Nikolai Alexandrovich; Popkov, Eduard Jurievich; Trutnev, Vladimir Alexandrovich; and Bulychev, Nikolai Petrovich, 3,704,496.

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Sliwkowski, Joseph J.; and Fryklund, Gilbert, to Computervision Corporation. Adaptive optical focusing system. 3,704,657, Cl. 95-44.00r.

Smalcl, Frantisek: *See—*
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Smallwood, Donald L.: *See—*
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Smidth, F. L., & Co.: *See—*
Jensen, Flemming Edvin, 3,704,873.
Smith, Allison L., to Owens-Illinois, Inc. Glass article having roughened, enamel surface and method for forming same. 3,705,050, Cl. 117-46.0fa.
Smith, Gordon E.: *See—*
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Smith, Harry A., to Dow Chemical Company, The. Formaldehyde adducts of saccharides. 3,705,146, Cl. 260-209.00r.
Smith Kline & French Laboratories: *See—*
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Pfeiffer, Francis R.; and Weisbach, Jerry A., 3,705,213.
Smith, Luther W., to American Optical Corporation. Variable amplitude polarizing beam splitter. 3,704,997, Cl. 350-157.000.
Smith, Thomas F.; and Frederick, Richard E., to General Electric Company. Gas turbine exhaust silencer and support. 3,704,762, Cl. 181-33.0hb.
Smith, William E., to Dow Chemical Company, The. Method for purifying biphenyl. 3,705,203, Cl. 260-674.00r.
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Societa' Farmaceutici Italia: *See—*
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Societa' Italiana Resine S.p.A.: *See—*
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Societe de Construction Mecaniques Pamhard & Levassor: *See—*
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Societe Industrielle de Travaux Electro-Mecaniques-(S.I.T.E.M.): *See—*
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Naruse, Oyhsuke; Ashiya, Ryosuke; Nii, Takehiko; and Fuse, Yuzo, 3,705,322.
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Sorenson, James L.; Reynolds, Gordon S.; and Pannier, Karl A., Jr., to Le Voy's, Inc. Disposable body drainage receiver. 3,704,709, Cl. 128-277.000.
Soto, Eduardo Rodriguez; and Longo, Joaquin. Tool having a head and a handle. 3,704,734, Cl. 145-29.00b.
Souders, Marvyn L.: *See—*
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South, William H.; and Dillman, Thayer L., to Westinghouse Electric Corporation. AC generator system including differential protection of exciter. 3,705,331, Cl. 317-13.00r.
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Spanel, Abram N.: *See—*
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Spanel, Abram N.; and Terry, Roy P., Jr., to Spanel, Abram N. Ground cover sheet. 3,704,544, Cl. 47-9.000.
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Spencer, Glenn S., to Bendix Corporation, The. One-way time delay electromagnetic clutch. 3,704,769, Cl. 192-52.000.
Spencer, Glenn S., to Bendix Corporation, The. Adjustable time delay electromagnetic clutch. 3,704,770, Cl. 192-52.000.
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Squibb, E. R., & Sons, Inc.: *See—*
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St. Clair, John C. Constructing broken rock supports for roof or cavities storing liquified hydrocarbon gases. 3,704,593, Cl. 61-.500.
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Stanadyne, Inc.: *See—*
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Standard Research Institute: *See—*
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Steel Company of Canada Limited, The: *See—*
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Steele, William Henry, to Victa Limited. Engine decompression device. 3,704,988, Cl. 123-182.000.
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Van Den Bulcke, Emile Oscar, to Corkerill-Ougree-Providence et Esperance. Apparatus for cooling wire rod. 3,704,874, Cl. 266-3.00r.
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Vitkov, Eil Slavchev; Petkov, Milko Ivanov; and Atanassov, Gueorgui Stoylov, to DSO "Balkancar". Road wheel drive arrangement for an electrically powered industrial vehicle. 3,704,759, Cl. 180-65.00f.
Vogel, Calvin; and Randall, David I., to GAF Corporation. Preparation of 2-chloroethylphosphonate diester. 3,705,215, Cl. 260-970.000.
Vogel, Calvin, to GAF Corporation. Production of haloethylphosphonate diesters. 3,705,217, Cl. 260-969.000.
Vogel, Christian: *See—*
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Vogeli, Ernst Jakob. Starting unit for heated gas discharge tubes. 3,705,329, Cl. 315-103.000.
Volkswagenwerk Aktiengesellschaft: *See—*
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Von Den Hoff, Toni; and Weber, Ewald, to Werkzeugmaschinenfabrik Adolf Waldrich Coburg. Device for adjusting the cross-rail on portal type machine tools. 3,704,649, Cl. 90-15.000.
von Riegen, Johannes: *See—*
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Von Rintelen, Harald: *See—*
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Andoniev Sergei Mikhailovich; Zhigulev, Petr Georgievich; Kudinov, Gennady Alexandrovich; Filipiev, Oleg Vladimirovich; and Energoresursov Predpriaty Chernoi Metallurgii, 3,704,747.
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Wahlberg, Eric C. Business transaction apparatus. 3,705,384, Cl. 340-149.00a.
Wallace, Harry L., to Burroughs Corporation. High speed multiple tape serial printing mechanism. 3,704,666, Cl. 101-90.000.
Waller, Arthur, to Bull Dog Lock Company. Retaining clip assembly. 3,704,563, Cl. 52-455.000.
Waller, Henry A., to Consolidated Controls Corporation. Valve with differential clutching valve actuator. 3,704,853, Cl. 251-59.000.
Walles, Wilhelm E.; McIntire, Otis R.; Rieke, James K.; and Griggs, Max V., to Dow Chemical Company, The. Internally treated plastic food containers. 3,705,041, Cl. 99-171.0lp.
Waltrich, Paul Francis, to Pennwalt Corporation. Removal of mercury from effluent streams. 3,704,875, Cl. 266-15.000.
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Waring, Robert K., Jr., to Du Pont de Nemours, E. I., and Company. Optical line scanner using a coupled ferroelastic-ferroelectric crystal plate. 3,704,937, Cl. 350-162.0sf.
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Weymann, Werner, to Daimler-Benz Aktiengesellschaft. Installation for the advance of the ignition point. 3,704,697, Cl. 123-117.00a.

Whaledent, Inc.: *See—*
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Wheat, Fred O. Solenoid valve assembly. 3,704,833, Cl. 239-585.000.

Wheaton Industries: *See—*
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Whitaker, Wiley M. Broom having a removable pivotable handle. 3,704,479, Cl. 15-172.000.

Whitaker, Wiley M. Mop having a removable pivotable handle. 3,704,480, Cl. 15-144.00r.

Wickersham, Arthur F., to Stanford Research Institute. Radio surface wave antenna. 3,705,407, Cl. 343-830.000.

Wiegand, Gretchen Ellen; Bauer, Victor John; and Safir, Sidney Robert, to American Cyanamid Company. Azolylpyridazine compounds and quaternary salts thereof. 3,705,157, Cl. 260-250.00a.

Wiegleb, Edward A., to Celotex Corporation, The. Safety door latch. 3,704,548, Cl. 49-199.000.

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Wilder, Paul R.; and Smallwood, Donald L., to Dover Corporation. Cartridge insert for a dispensing nozzle. 3,704,817, Cl. 222-482.000.

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Willcott, Walter F. Adjustable torso support attachment for wheel chairs and the like. 3,704,910, Cl. 297-411.000.

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Nicolson, Garth Fancher; and Wilms, Carl Alfred, 3,704,638.

Wilson, Jerry M., to Pillsbury Company, The. Method and apparatus for handling fowl. 3,704,688, Cl. 119-22.000.

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Winkler, Julius G., to Compo Industries, Inc. Method of string-lasting. 3,704,474, Cl. 12-145.000.

Withrow, James Bruce; and Gardner, Earl William, to Duff-Norton Company, Inc. Overload clutch. 3,704,765, Cl. 188-134.000.

Witzig, Werner, to Sonoco Products Company. Convolute tube and method for making same. 3,704,730, Cl. 138-144.000.

Wolda, Tiete O., to Boyles Industries Limited, mesne. Retrieving and lowering system for a core barrel. 3,704,755, Cl. 175-246.000.

Wolda, Tiete O., to Boyles Industries Limited, mesne. Apparatus for lowering and retrieving a core barrel. 3,704,756, Cl. 175-246.000.

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Wolfinger, Mark Dennis, to Monsanto Company. Inhibiting premature vulcanization of diene rubbers with N-thioformamides. 3,705,135, Cl. 260-79.50b.

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Yamane, Izumi; Nagayama, Masuzo; and Takai, Makoto, to Lion Fat & Oil Co., Ltd. High molecular composition. 3,705,139, Cl. 260-92.80a.

Yamano, Togo; Henmi, Teruji; Usui, Yoshiro; Noda, Etsunosuke; and Yamada, Masayuki, to Takeda Chemical Industries, Ltd. Antidermatophytosic composition and method of use. 3,705,246, Cl. 424-270.000.

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Zabiak, Daniel M., to Dick, A. B., Company. Infrared absorptive jet printing ink composition. 3,705,043, Cl. 106-20.000.

Zagar, Irvin Frank, to Wilfley, A. R., and Sons, Inc. Vertical centrifugal pump. 3,704,960, Cl. 415-131.000.

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Zenith Radio Corporation: *See*—
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Zickefoose, Rox L.; Miller, Gerald G.; and Judge, James R., to National Steel Corporation. Sampling bomb and method of sampling and analyzing a heat of unkilled steel. 3,704,621, Cl. 73-425.40r.

Zimmerman, Abraham A.; Furlong, Louis E.; and Shannon, Hugh F., to Esso Research and Engineering Company. Fuel distribution in a gasoline engine. 3,705,024, Cl. 44-72.000.

Zimmermann, F., & Co., Firma: *See*—
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Zimmermann, Firtz: *See*—
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Zimmermann, Gert, to Zimmermann, F., & Co., Firma. Method and apparatus for packing vertically stacked stamps and other articles in a shrinking firm. 3,704,566, Cl. 53-30.000.

Zucker, Fredric E.; Kaswer, Joseph, Jr.; and Wilczynski, Thomas S., to Pitney-Bowes Inc. Device for displaying symbols in a pseudo-random sequence. 3,704,890, Cl. 273-143.00r.

LIST OF PLANT PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF DECEMBER, 1972

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Duffett, William E.: *See*—
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Jessel, Walter H., Jr., and Duffett. 3,363.

Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,262, 12–5–72, Cl. 82.

Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers Inc. Chrysanthemum plant. 3,263, 12–5 ;72, Cl. 82.

Klehm, Carl G. Peony plant. 3,264, 12–5–72, Cl. 68.

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Adams, Clyde L. Pendant. 225,368, 12–5–72, Cl. D45—10.

Adams, John K., to Ransburg Electro-Coating Corp. Console cabinet for housing electrical and pneumatic controls for coating apparatus. 225,333, 12–5–72, Cl. D26—5.

Aderman, Wayne L., to International Business Machines Corp. Document reader-punch. 225,332, 12–5–72, Cl. D26—5.

Alleman, Benjamin D., to Neptune Winch Corp. Multiple winch. 225,357, 12–5–72, Cl. D41—1.

Altieri, Anna, Coffee pot. 225,366, 12–5–72, Cl. D44—26.

American Playground Devices Co.: *See*—
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Amerock Corp.: *See*—
Tegner, Raymond U. H. 225,302.
Tegner, Raymond U. H. 225,303.
Tegner, Raymond U. H. 225,304.
Tegner, Raymond U. H. 225,305.

Anchor Hocking Corp.: *See*—
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Antoni, Patricia Ann, to Ekco Products, Inc. Tray. 225,364, 12–5–72, Cl. D44—10.

Bacon, Duane W., Jr. Hanger for supporting a balanced article. 225,347, 12–5–72, Cl. D34—15.

Baird, Raymond C., Jr.: *See*—
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Balbach, Sara L., and R. W. Greger, to Corning Glass Works. Jar or similar article. 225,309, 12–5–72, Cl. D9—164.

Baldwin, D. H., Co.: *See*—
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White, Winsor D., Jr. 225,373.

Barefoot, Boyd E. Container cover for a combustion engine vapor injector. 225,308, 12–5–72, Cl. D8—254.

Barket, Dennis, and W. D. White, Jr., to D. H. Baldwin Co. Piano. 225,374, 12–5–72, Cl. D56—9.

Barnett, Stanley. Inflating pump or similar article. 225,329, 12–5–72, Cl. D23—14.

Brunswick Corp., The: *See*—
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Schaefer, George E., and Reineman. 225,340.

Beckman, Glenn B., to Corning Glass Works. Beverage server or the like. 225,365, 12–5–72, Cl. D44—21.

Bodman, John M. O., to The Educational Supply Association Ltd. Toy balance. 225,346, 12–5–72, Cl. D34—15.

Boldt, Melvin H., to G. W. Murphy, Industries, Inc. Edger-trimmer. 225,295. 12–5–72. Cl. D8—8.

Boldt, Melvin H., to G. W. Murphy, Industries, Inc. Hedge trimmer. 225,296. 12–5–72. Cl. D8—8.

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